Chromeleon 7

Chromatography Data System

Version 7.4.1

Release Notes

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1 Introduction

Chromeleon™ 7.4.1 is the latest version of the Thermo Scientific™ Chromatography Data System (CDS). Chromeleon delivers superior compliance tools, networking capabilities, instrument control, automation, data processing, and much more, providing the fastest path from samples to results. Building upon market-leading innovations of prior Chromeleon software releases – such as dynamic interactive data displays, an integrated database for rapid data retrieval, and spreadsheet-based reporting – Chromeleon features a modern user interface, comprehensive tools for peak detection, and an innovative workflow management framework, all of which speed up learning, simplify operation, and deliver results with greater efficiency than any other chromatography data system.

This release provides updated and new instrument control for instruments from Thermo Fisher Scientific and third-party manufacturers. Improvements and enhancements have been made in several areas including ease of use, enterprise performance, data processing, and reporting. Please see below for more details on these and other enhancements in this release.

2 Release Notes

These Release Notes list the new features and improvements of the Feature Release only. For information on extensions and enhancements in previous Chromeleon releases, including previous Maintenance Updates, please refer to the Release Notes of that release.

2.1 Other documentation

The following documents have been updated with this release:

- *List of Supported Instruments - Chromeleon 7.4.1*
- *Online Help* (distributed with this release)
- *Supported Operating Systems - Chromeleon 7.4.1*
- *Installation Guide - Chromeleon 7.4.1*
- *Functional Specifications 7.4.1*

2.2 Installation

To install this Feature Release, run the following program from the distribution media:

Install.exeInstall.exe

2.2.1 Allotrope Exporter

If the optional Allotrope Exporter package has previously been installed, it is also necessary to install the latest version, which is part of a separate installation package. Please contact your local Thermo Fisher Scientific representative for a copy of this.

To install this additional Maintenance Update, run the following program from the Allotrope distribution media:

Install.exe.

2.2.2 Hotfixes

Any previously installed Hotfixes must be removed prior to installing 7.4.1. The relevant files will be replaced as part of this update. Details of the specific files can be found in the Hotfix Release Notes.

2.2.3 Operating Systems

With this release, Chromeleon 7.4.1 now supports:

- Microsoft SQL Server 2025
- Microsoft SQL Server Express 2025

See *Supported Operating Systems – Chromeleon 7.4.1* for further details.

3 What's new in Chromeleon 7.4.1

This section provides a short overview of all new features of Chromeleon 7.4.1. For more details, refer to the *Online Help*.

3.1 New and updated Thermo Scientific instrument drivers

3.1.1 Vanquish Split Sampler HT Amplify / FT Amplify [866677]

This Chromeleon release introduces support for the new Thermo Scientific™ Vanquish™ Split Sampler HT Amplify (VH-A14-A) and Vanquish Split Sampler FT Amplify (VF-A14-A). The Vanquish Split Sampler HT Amplify / FT Amplify are part of the Vanquish Amplify UHPLC system, which is designed for biopharmaceutical workflows. The system's inert sample path helps prevent unwanted interactions between analytes and metal surfaces to minimize non-specific adsorption.

3.1.2 Vanquish Pumps - Driver update [841095]

The Vanquish Pump driver now offers options to configure the behavior of digital inputs to serve a 'Stop flow' signal.

3.1.3 Vanquish Column Compartment - Driver update [346274]

The Vanquish Column Compartment driver now supports the new Active Pre-heater TQ and Vanquish Low-Dispersion valves 2pos-6port, 1500 bar.

3.1.4 Cindion™ Combustion/Absorption Module - Driver update

Cindion™ Combustion/Absorption Module Driver version 1.3.2

3.2 Instruments IQ/OQ/PQ

3.2.1 HPLC Instruments IQ

New HPLC Instruments IQ tools are available in Chromeleon 7.4.1, namely HPLC Instruments IQ version 6.1. For details, please refer to the document \Documents\HPLC Instruments IQ V.6.1 - Release Notes.pdf on the Chromeleon CDS disk.

3.2.2 HPLC Instruments OQ/PQ

New HPLC OQ/PQ tools are available in Chromeleon 7.4.1, namely OQ/PQ version 10.1. For details, please refer to the document \Documents\OQ PQ V.10.1 - Release Notes.pdf on the Chromeleon CDS disk.

Note: Vanquish drivers released as Independent Driver Releases may update the HPLC Instruments IQ tools and/or HPLC Instruments OQ/PQ tools.

3.3 New and updated third party instrument drivers

This chapter lists new and updated Third Party Instrument Drivers added to Chromeleon 7.4.1 and new and updated drivers for Chromeleon available from third parties. For details on supported options, required licenses, installation, and control, refer to the Online Help or the List of Supported Instruments document found on the Chromeleon 7.4.1 installation kit and to the Release Notes of the respective Third-Party Instrument Driver.

3.3.1 Updated drivers

- Agilent Drivers for Chromeleon Revision 3.1 Update 2 (ADC 3.1 U2)
- Agilent Drivers for Chromeleon Revision 3.2 (ADC 3.2)

3.3.2 Updated drivers available from third parties

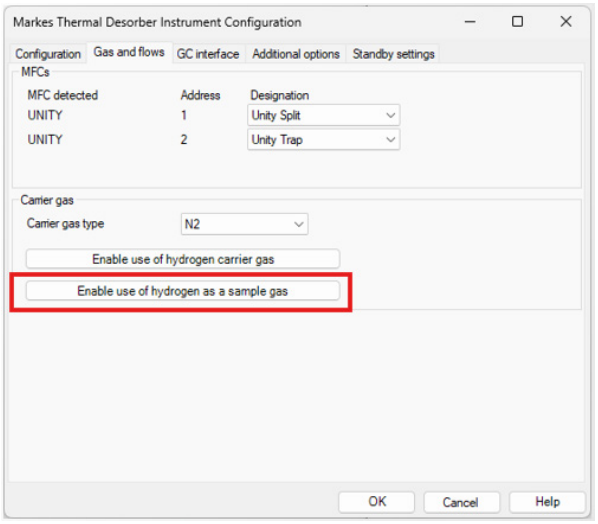
- Advanced Electrophoresis Solutions CEInsight Driver version 1.1.2.28221
- Evosep One HPLC system driver version 3.0.37
- Shimadzu Driver Package version 4.30
    - Shimadzu GC Driver for Chromeleon version 2.50
    - Shimadzu LC Driver for Chromeleon version 4.00
- Waters LC Support Layer 3.1.0 for Thermo Fisher CDS

3.3.3 New drivers available from third parties

- GL Sciences OPTIC-5 GC Multipurpose Inlet driver version 1.0

3.3.4 Hydrogen sample gas support for Markes Thermal Desorber [877141]

With this release, Chromeleon adds support for Hydrogen as a sample gas for the Markes Thermal Desorber (TD). Users can now configure Hydrogen as the sample gas directly within the Chromeleon interface for supported Markes TD modules, including AirServer and CIA.



3.4 Removed Thermo Scientific instrument drivers

This chapter lists Thermo Scientific instrument drivers removed from the Chromeleon 7.4.1 distribution.

- Dionex IC System
- Dionex ICS-1500 IC System
- Dionex ICS-2000 IC System
- Dionex ESA Corona Charged Aerosol Detector
- Dionex ESA Coulochem III Detector
- Dionex ESA 584 and 582 Isocratic Pump
- Dionex Summit RF-2000 Fluorescence Detector (digital)
- Dionex UltiMate 3000 DGP-3600 Pump
- Dionex UltiMate 3000 DGP-3600BM Pump
- Dionex UltiMate 3000 FLM-3x00 Flow Manager
- Dionex UltiMate 3000 HPG 3x00 Pump
- Dionex UltiMate 3000 ISO-3100 Pump
- Dionex UltiMate 3000 LPG-3400BM Pump
- Dionex UltiMate 3000 LPG-3400XRS Pump
- Dionex UltiMate 3000 LPG-3x00 Pump
- Dionex UltiMate 3000 OAS-3X00TXRS LC Autosampler
- Dionex UltiMate 3000 PDA-3000 Photodiode Array Detector
- ISCO Foxy Jr/Foxy R1 Fraction Collector

3.5 Removed third party instrument drivers

This chapter lists third party instrument drivers removed from the Chromeleon 7.4.1 distribution.

- Waters 474 Fluorescence Detector
- Waters 996/2996 PDA Detector
- Waters 2487 Detector

3.6 Installation and Setup

3.6.1 Configurable Data Vault Path for Post-Installation Setup [844687]

This feature introduces the ability to specify the base path for Local Data Vaults during the Chromeleon setup process by using either a command line parameter or a response file.

The enhancement gives users and IT administrators greater control over where Local Data Vaults are created and stored. This is especially relevant for instrument computers with mass spectrometers, where the system drive may be small and a separate data drive is intended for MS data storage.

3.6.1.1 Use Cases

First Time Installation
Users can specify the Local Data Vault base path during the initial Chromeleon setup so that newly created Data Vaults are stored in the desired location.

Silent Installation
IT administrators can perform a silent installation of Chromeleon and specify the Local Data Vault base path through the command line or a response file, eliminating the need for user interaction.

Post-Installation Configuration
Users can run Post-Installation Configuration to specify the base path only when creating a new Local Data Vault.

The configurable Local Data Vault path is a create-time setting. Once a Local Data Vault has been created, its path cannot be changed, updated, repaired, or migrated using this option.

3.6.1.2 Technical Details

(Reference Chromeleon Help for additional information) The Local Data Vault path can be specified as an installation command-line parameter or in a response file.

Command-line Example:

```
Install.exe /q "/c:LocalDataVaultsPath=D:\DataVaults"
```

Response-file Example:

```
<ResponseFile>
  ...
  <ConfigurationTasks>
    <Task Name="LocalDataVaultsPath" Value="D:\DataVaults" />
  </ConfigurationTasks>
</ResponseFile>
```

If no path is specified, the setup process uses the default location:

```
%ProgramData%\Dionex\Chromeleon\DataVaults
```

If an invalid path is specified, an error is written to the setup log file and the setup process falls back to the default path.

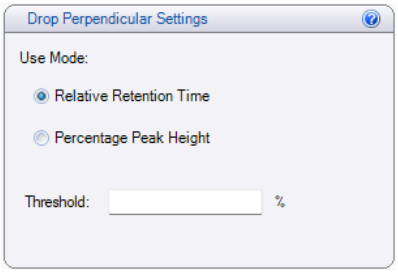
3.7 Data Processing and Reporting

3.7.1 Peak integration with enforced drop perpendicular [149076]

When working with large asymmetric peaks (for example, those typically observed for large molecular weight compounds) there are many times when consistent, repeatable, automatic integration is difficult. This release introduces support for enforced peak splitting by dropping a perpendicular line at a user-defined position within a detected peak. This helps automate

integration on chromatograms with asymmetric or fronting peaks that would otherwise require repeated manual integration.

The feature can be configured relative to the detected retention time of the peak or by using a percentage of peak height. When configured relative to retention time, the drop perpendicular remains tied to the detected peak so that the delimiters shift automatically if the peak retention time changes during a sequence. Alternatively, users can define the split position by percentage of peak height. In the Processing Method Advanced Settings tab, users can define whether the drop perpendicular is applied relative to the detected retention time of the peak or by using a percentage of peak height. A threshold setting is also available to fine-tune peak splitting behavior.

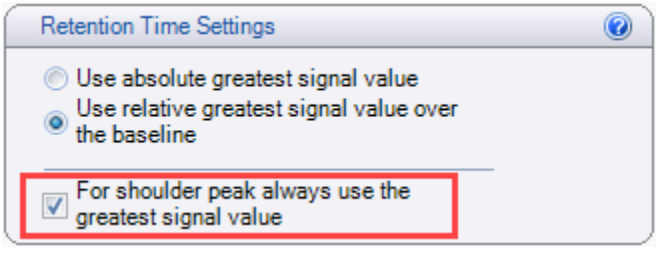


When either split peak option is applied for a component, both left and right delimiters can be defined independently. The delimiter values can be set directly in the component table, or in the component properties.

3.7.2 New Processing Option for the Determination of the Retention Time of Shoulder Peaks [827184]

Chromeleon 7 computes the retention time of shoulder peaks in a way that it is located between peak start and peak end, but not necessarily at the data point with the absolute greatest signal value, or with the greatest signal value relative to the baseline. *[There is a detailed description in the release notes for Chromeleon 7.2.10 MUi (section 2.2.3 and especially section 6.1) about how Chromeleon 7 determines whether the retention time for shoulder peaks is set at the data point with the greatest signal value or at a reasonable data point inside the peak boundaries.]* This can lead to scenarios where, for some injections in a sequence, the retention time of an automatically detected, or manually inserted, shoulder peak is located at the peak start or peak end, and for some injections at a time inside the peak.

Chromeleon 7.4.1 includes a new processing option which will enforce that the retention time of shoulder peaks is always set at the data point with the greatest signal value between peak start and peak end. The new option called '**For shoulder peaks use always the greatest signal value**' (Default is Off) can be set in the Processing Method Editor pages 'General' or 'Advanced Settings'.



If enabled, this option uses the time of the greatest absolute signal value as the retention time for peaks identified as shoulders by peak detection. When the option is disabled (default behavior), the existing calculation based on a virtual tangential baseline is used.

The setting is retained when processing methods are saved, copied, or exported, but it is only applied in Chromeleon versions that support this feature. *Chromeleon versions 7.2.10 MUj or earlier, 7.3.2 MUf or earlier, and 7.4 do not support this setting and will ignore it if enabled, which may result in different retention time values for shoulder peaks. To avoid inconsistent results, this option should not be used in mixed installation environments. All Chromeleon clients intended to work with processing methods using this setting should be upgraded to a Chromeleon version that supports the feature. This also applies to the instrument server if the corresponding calculations are used as part of the SST or IRC.*

There is also a new report variable, '**Shoulder Peak Retention Time Determination**' in the report category '**Processing Method',** which allows to report whether this new option is applied or not.

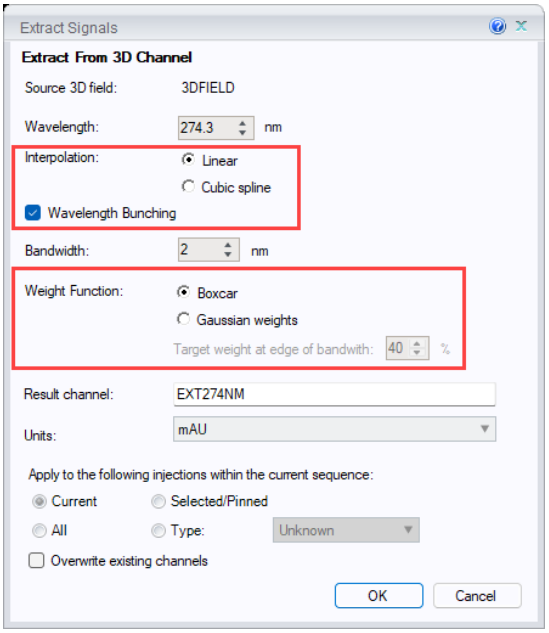
3.7.3 UV Extraction from 3DFIELD Data [415359]

This release updates post-acquisition UV channel extraction from 3DFIELD data when using the Extract Signals command in the Studio or the corresponding IRC/SST step.

In earlier versions, UV signal extraction from 3DFIELD data did not always use the intended wavelength range during extraction. Depending on the selected wavelength, bandwidth, and wavelength resolution, the previous method could use the preceding wavelength point or, for bandwidth-based extraction, average signal values from a range that did not fully include the requested interval.

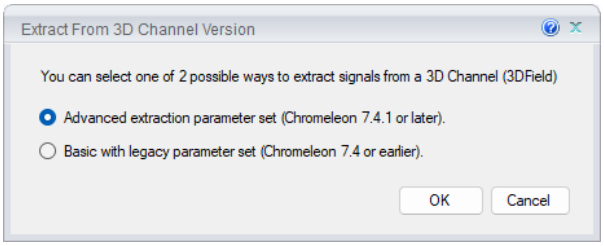
The updated extraction method corrects wavelength range selection. For extractions using a bandwidth, it correctly applies averaging across the full intended wavelength interval.

This release also introduces new averaging options for bandwidth-based extraction, including Boxcar and Gaussian. In addition, interpolation settings have been expanded. While previous releases offered interpolation as a single option, users can now choose between Linear and Cubic Spline interpolation in the updated extraction method.



When configuring extraction through the SST/IRC process, users can choose between Legacy Mode and the updated extraction behavior. Legacy Mode preserves the previous extraction procedure for compatibility with existing workflows and previously acquired data. When

Legacy Mode is enabled, the new Use complete bandwidth for averaging option is also available to control how signal values are averaged across the bandwidth.



When signals are extracted interactively in the Studio Contour/3D Plot, the updated extraction method is used by default. However, if an associated SST/IRC extraction action is configured to use the legacy algorithm, Studio extraction uses the legacy algorithm in the corresponding context.

3.7.4 Support for FLD Spectra in the Spectral Library [444751, 444758, 444909]

With this release, fluorescence spectra displayed in the interactive Fluorescence Spectra plot can be added directly to a spectral library by using either Library > Add Spectrum on the ribbon or the Add Spectrum command from the context menu.

To help users distinguish between UV and fluorescence spectra in the Spectral Library, the library grid spectra editor now shows additional columns for Detector Type, Scan Type, Ex Wvl, Em Wvl, and Detector Model No. For fluorescence spectra, these columns are populated with the corresponding values when the spectrum is added to the library.

The single record grid in the lower right of the editor also shows these properties in pivot presentation, making it easier to review the details of the selected spectrum.

3.7.5 Expanded report variables for Intact Protein Deconvolution (IPD) [841839]

3.7.5.1 For IPD matched components [845873]

With this release, Chromeleon expands the reporting capabilities available for Intact Protein Deconvolution matched component results by introducing new report variables for charge state and signal intensity.

The new report variables allow users to report values for:

- A specific matched charge state by entering the desired charge state.
- The most intense matched charge state based on signal intensity.

3.7.5.2 For matching component molecular mass [841839]

Theoretical molecular mass values are now also automatically populated during deconvolution and can be included directly in IPD reports using the new Matching Component Molecular Mass report variable.

3.7.6 Expanded mass precision and Extracted Ion Chromatogram/Fragment dialog enhancements [845497]

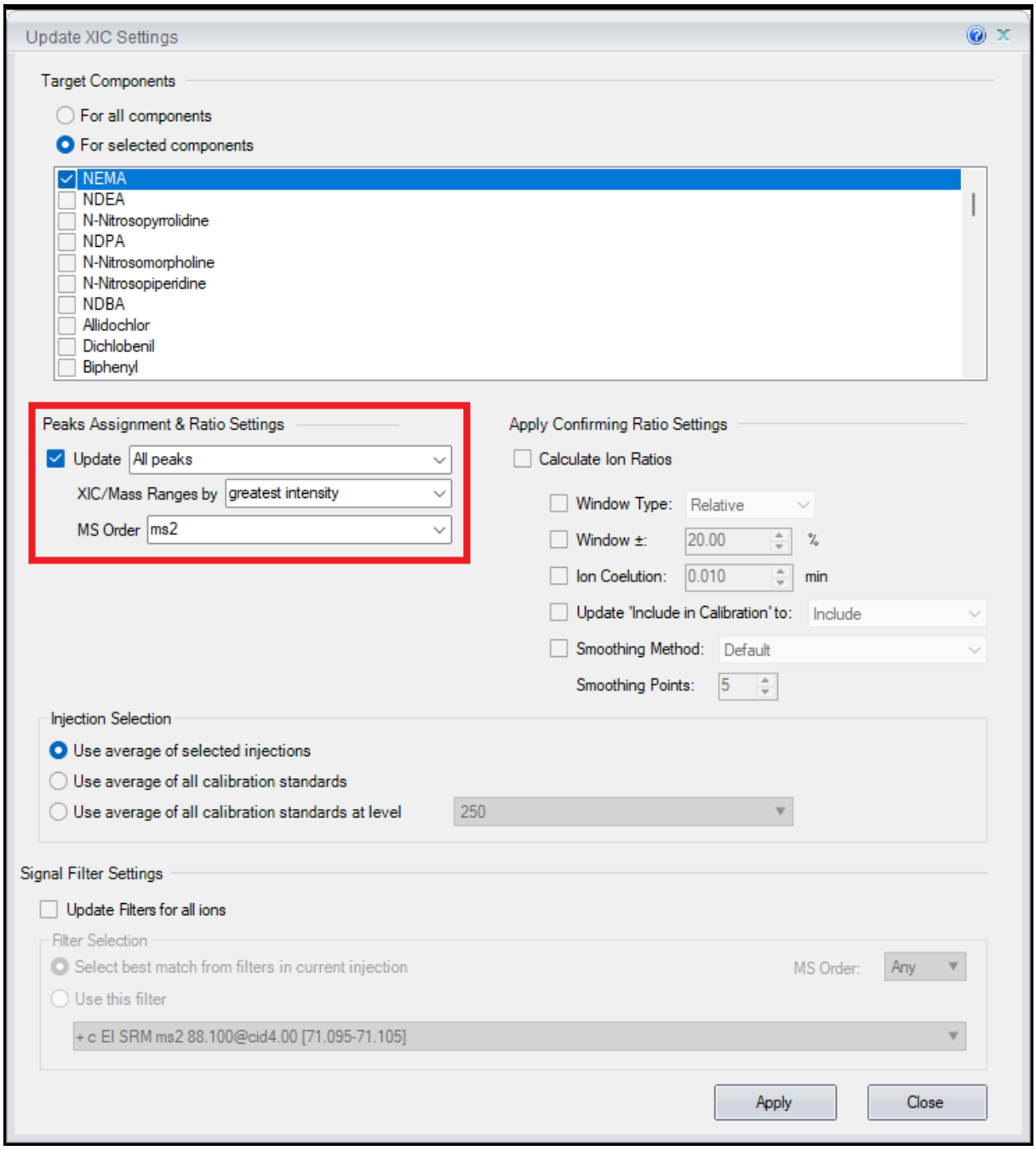
Chromeleon 7.4.1 expands support for high-resolution mass spectrometry workflows by increasing mass precision to up to six decimal places for mass accuracy-related values

including fragment mass, product mass ranges, and precursor masses. This allows high-resolution MS data to be imported and processed without the need for manual rounding.

In addition, usability improvements have been made to the Component Properties dialog for the Extracted Ion Chromatogram and Fragment configuration. XiC window sizing preferences are retained as part of the user profile

3.7.7 Update XIC Settings screen peak assignment [884364]

The existing *Update XIC Settings* dialog has been enhanced with a new *Peaks Assignment & Ratio Settings* section for automatic XIC mass assignment. Selecting the Update checkbox enables automatic XIC mass assignment and the associated configuration options. For peaks with assigned scan filters, Chromeleon evaluates the acquired spectra and automatically selects XIC masses based on the configured selection criteria.



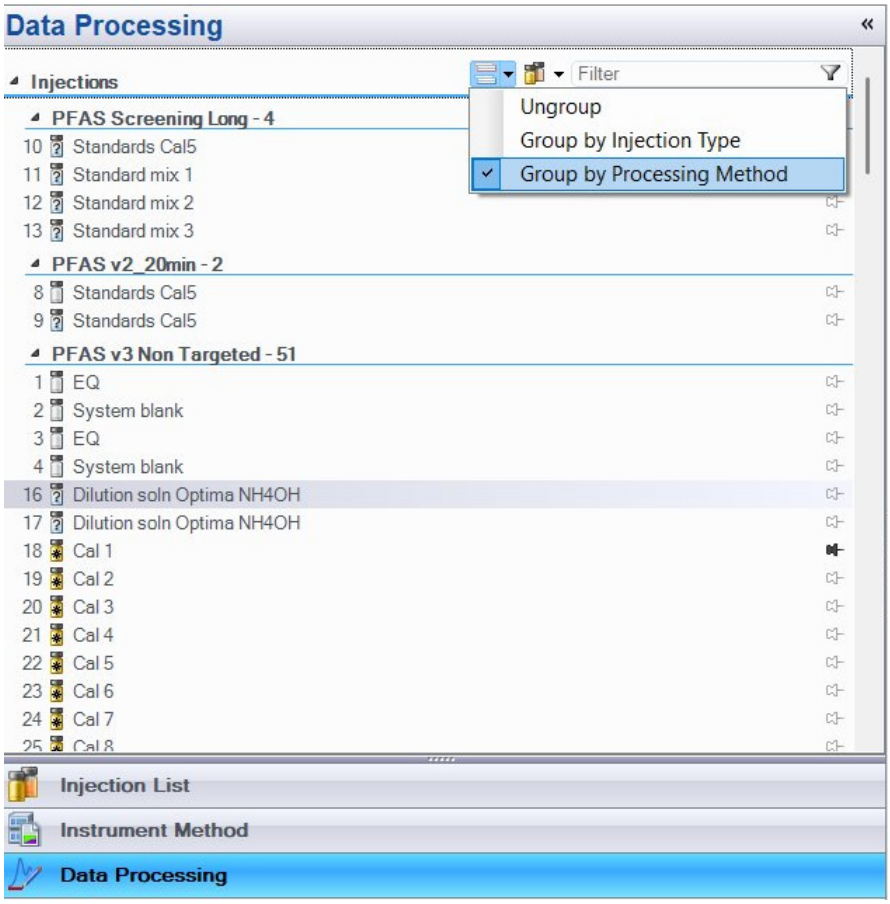
Users can choose to assign the most intense ion, optionally exclude the precursor m/z, update quantitation peaks, confirming peaks, or both, and apply the updates to selected MS orders (MS^2, MS^3, or both). Selected injections can also be used to determine XIC masses and evaluate ion ratios before the updated masses are assigned.

3.7.8 Alignment of NTMS Processing algorithm with BioPharma Finder 5.4 [899311]

With this release, the BioPharma Finder™ algorithm used for NTMS detection has been updated to the same version that is used by BioPharma Finder™ 5.4

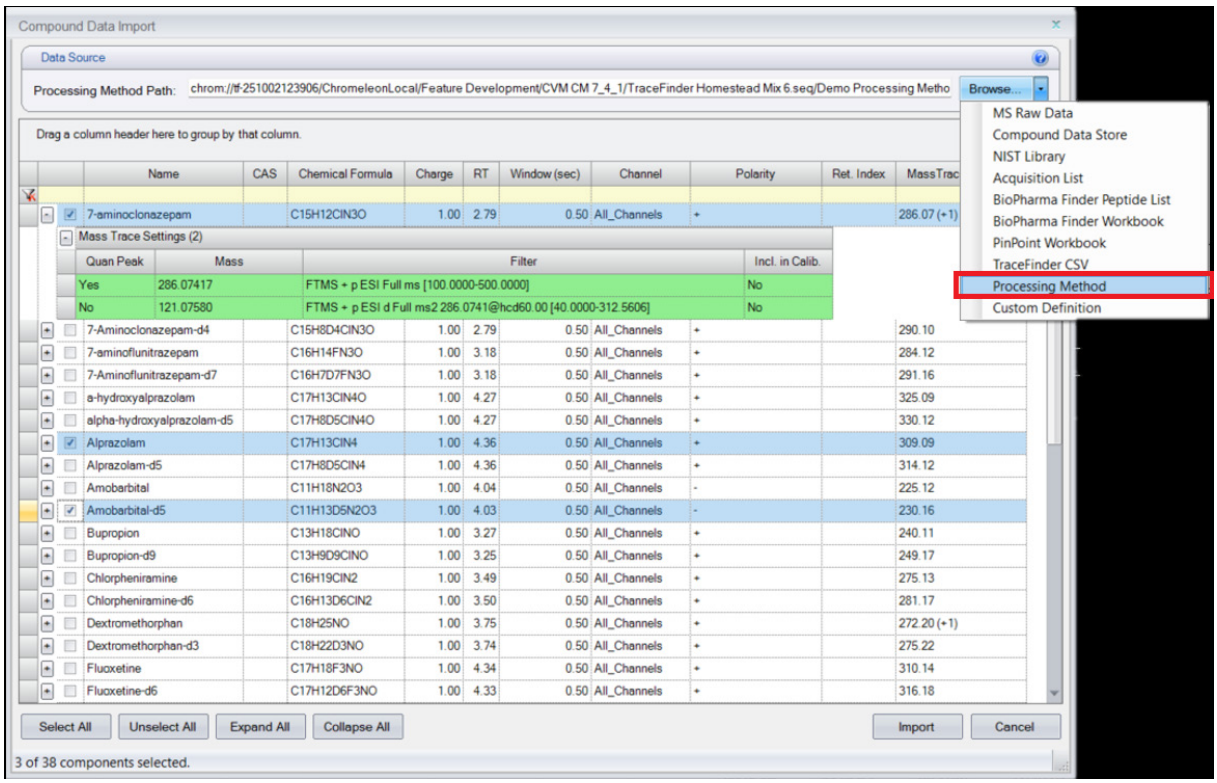
3.7.9 Injection List grouping by processing method [866704]

A new *Group by Processing Method* option in the Injection List helps users organize injections by the processing method applied to them. This makes it easier to review data during method development and to separate sample sets when screening and quantitative injections are collected in the same batch.

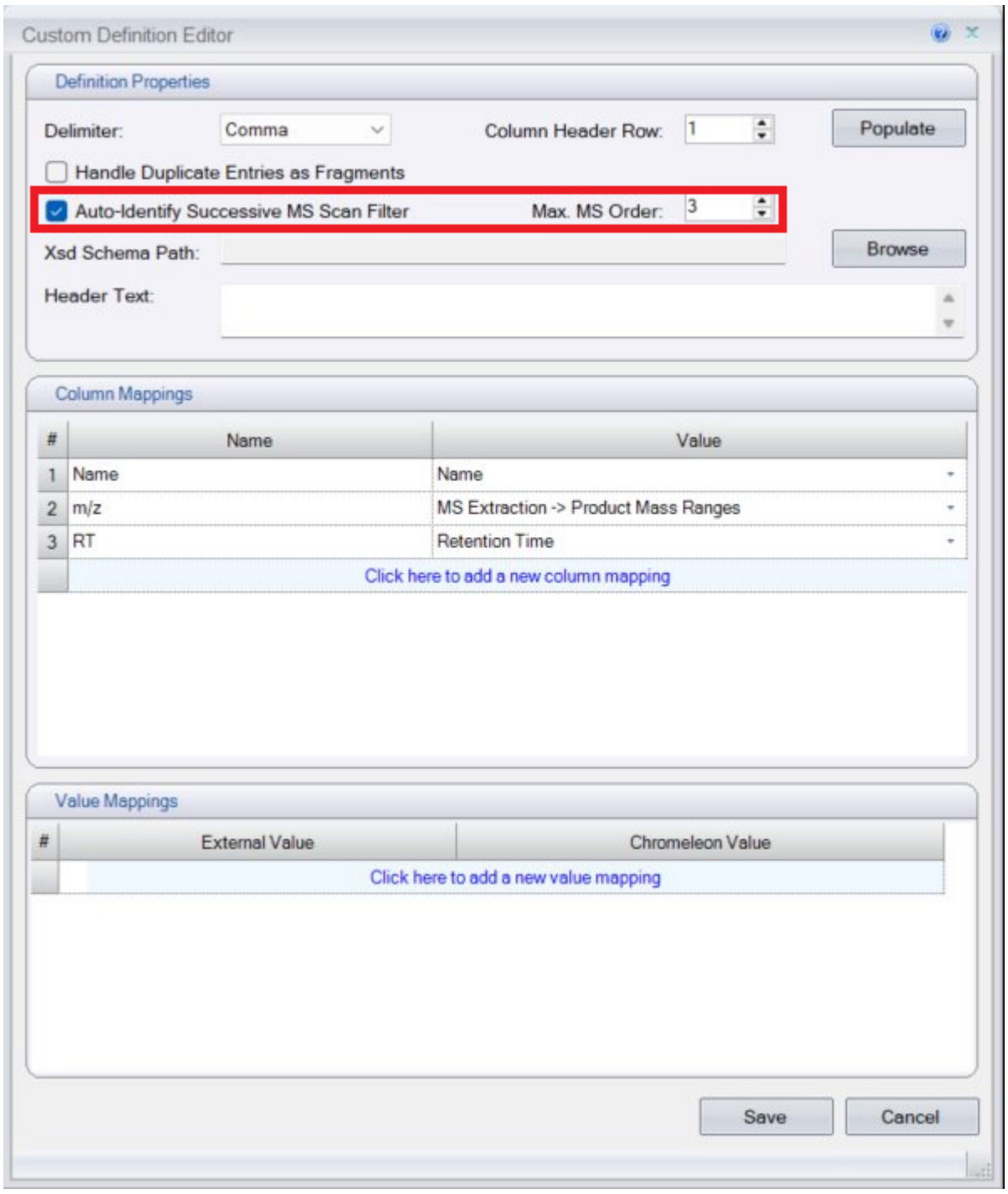


3.7.10 Custom Definition Editor enhancements [866704]

Via a new *Processing Method* import option users can reuse components from an existing processing method, helping them maintain a curated component database and quickly build the methods tailored for each injection:



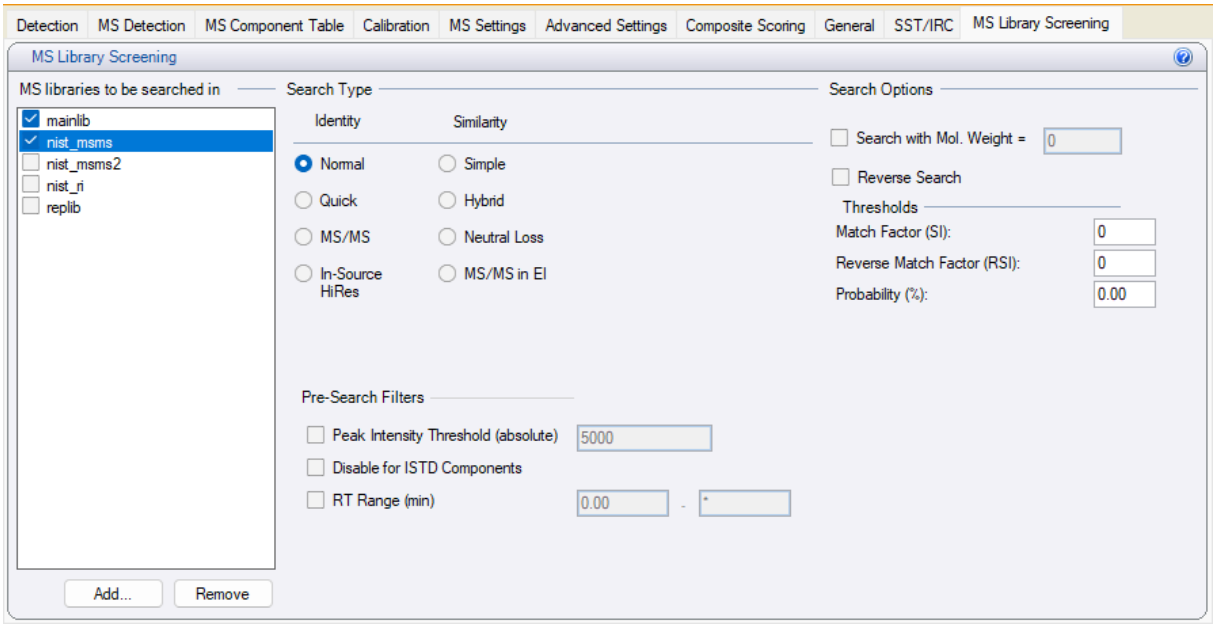
A new checkbox option: *Auto-Identify Successive MS Scan Filter* was added to let Chromeleon automatically select the best successive MS scan for peak confirmation, reducing manual setup and simplifying complex MSn workflows:



Select the **Auto-identify Successive MS Scan Filter** checkbox to automatically assign successive MS scan filters during component import. The feature uses the imported mass to populate the MS1 extracted mass, then uses that extracted mass as the precursor for identifying the corresponding MS^2, MS^3, and subsequent scan filters. Successive scan filters are selected based on precursor mass, retention time alignment, and signal intensity up to the configured maximum MS order.

3.7.11 MS Library Screening Pre-Search Filters [866705]

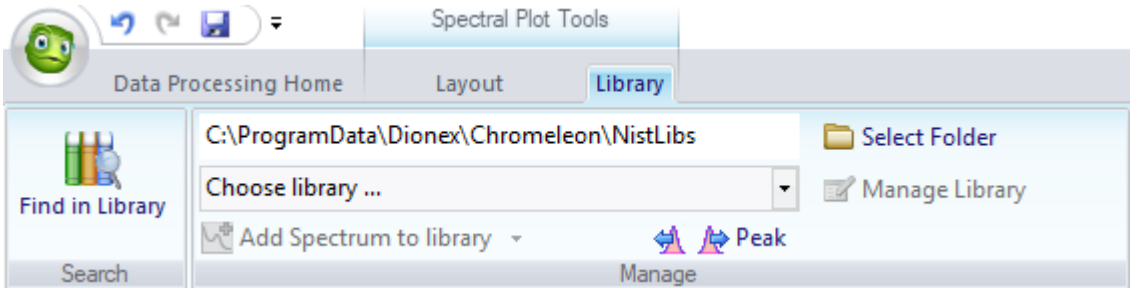
Added *Pre-Search Filters* to the MS Library Screening tab allow users to limit library searches to identified peaks, apply a minimum peak intensity threshold, exclude internal standard components, and restrict searches to a specified retention time range. These filters reduce processing time by focusing library search scope to relevant spectra:



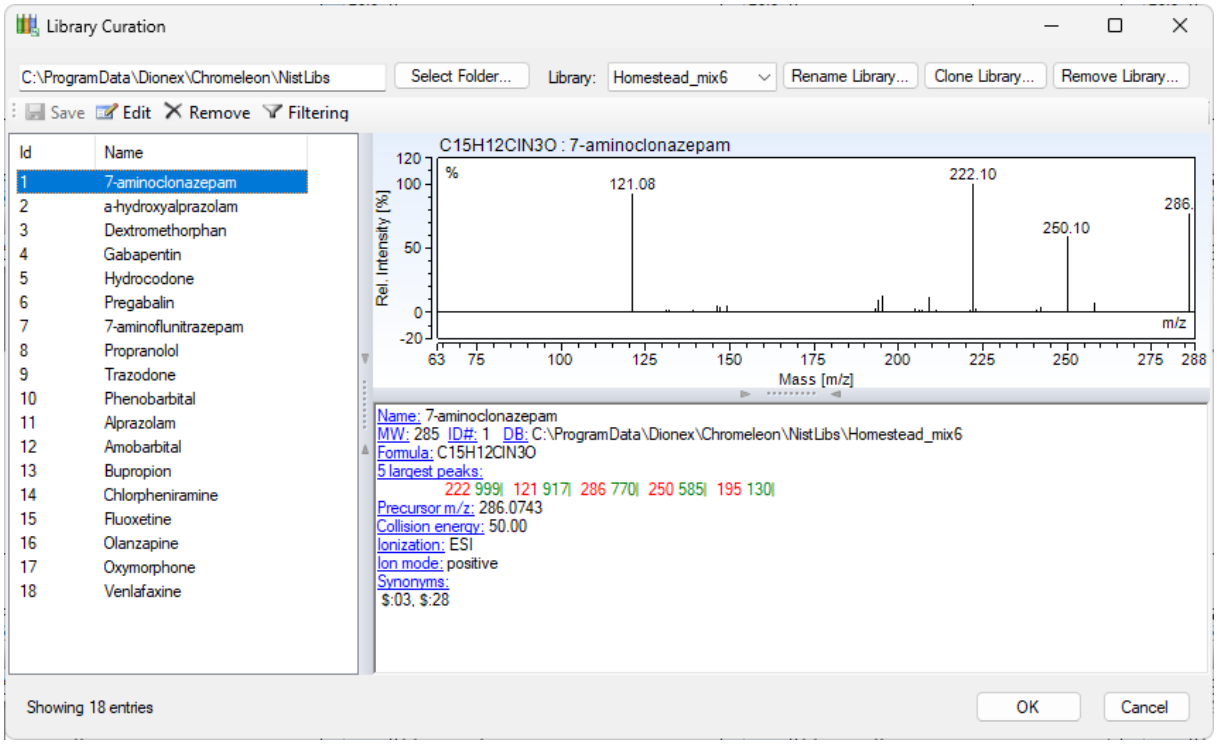
3.7.12 MS libraries in NIST format [861616, 861619, 861622, 861623]

3.7.12.1 Curation of MS libraries

Curating MS libraries in NIST format is now supported via Chromeleon Studio: Data Processing: Mass Spectra: Library ribbon tab:

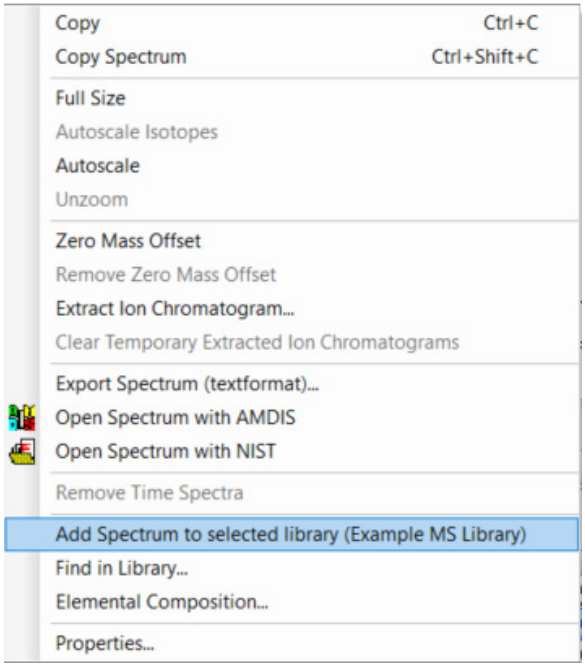


Clicking on the *Manage Library* button opens up a dedicated modal window in which a MS library can be curated:

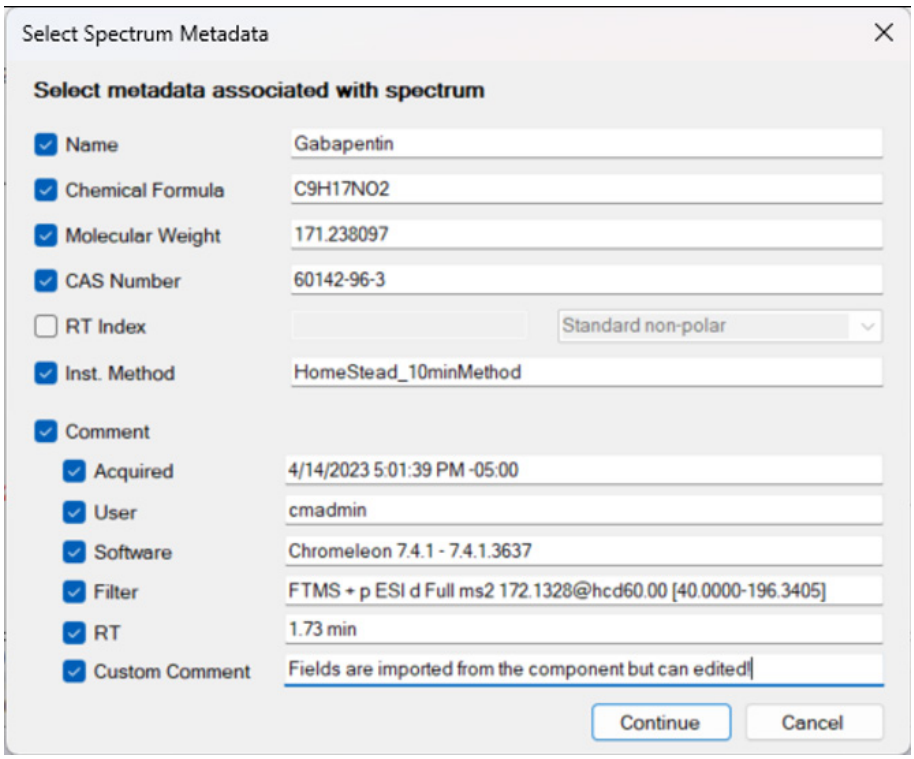


3.7.12.1 Adding a spectrum to the selected MS library

Context menu displayed over Mass Spectra/Mass Fragments plot was adjusted to contain an option to add the selected spectrum to the selected MS library in NIST format:



Additionally, when the user adds a new spectrum to the MS library in NIST format, the user is now given a choice to pull relevant spectrum metadata from the processing method to enhance the added spectrum:



3.7.13 Reporting 2.0 Updates

3.7.13.1 General Updates [390397]

The default predefined Report Template version is now Report Template v2.0.

Users are now prevented from deleting all report template sheets at once. In all other cases, an indication is provided about how many report sheets will be irrevocably deleted and the user can confirm it or not.

3.7.13.2 Report Tables [851080, 866708]

The following new Report Tables are now supported:

- *Results: Fragments Results Table*
  Displays fragment-specific data used to support component confirmation.
- *Library: General Library Table*
  Displays relevant numeric data for the peaks of the current injection, such as the retention time with matching MS library results.
- *Library: Fragment Library Table*
  Displays identified peak results with matching fragment library results of the current injection.

3.7.13.3 General Charts [390397]

Their context menu was enriched to allow users to:

- turn on/off: chart title, chart axis title, data labels
- change: font settings of title, horizontal axis, vertical axis
- change: label alignment of data labels

3.7.13.4 Updates to the Ribbon [390397]

"Home" ribbon:

- Clipboard ribbon category now contains a "Copy/Paste Format" option
- Editing ribbon category now contains Sort, Find and Clear options

"Page Layout" ribbon: "Page Setup: Page Breaks"

- New option: "Repeat Table Headers on Manual Page Break" which allows table headers to be preserved across pages in case the table is split by manual page break into multiple pages. When this option is selected, the table is split based on manual page breaks, table Properties and Page Breaks control become disabled.

"Insert" ribbon:

- New option: "Shapes" was added into the "Illustrations" ribbon category allowing users to insert three basic shapes into the report template: line, rectangle or oval.

3.7.13.5 Updates to the Grouping Options of Report Tables [390397]

If several injections (peaks) have the same result, these injections (peaks) are combined in one group. You can use the option "Report only the last row for each group" to show results only once per group, with the choice of either a) hide remaining rows to hide the filtered-out rows or b) remove remaining rows to delete these rows from the table.

3.7.13.6 Updates to the Autorepeat Area Setup [390397]

New option: "Insert page break after each table in autorepeat area":

- If checked, a new page break is added after each table in autorepeat area.

New option: "Retain print area":

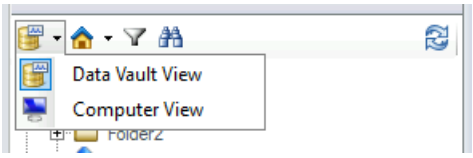
- Until now print area was ignored when auto-repeating was enabled, from now on it is possible to retain print area (print area is copied over auto-repeated sections).

3.8 Chromeleon Console

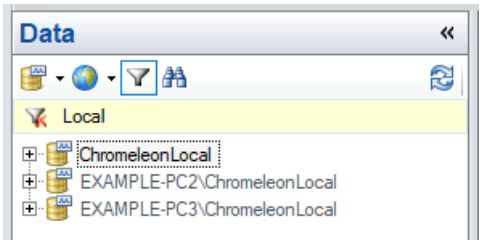
3.8.1 Chromeleon Console general improvements [310786]

Chromeleon 7.4.1 introduces several improvements to the Navigation pane in the Chromeleon Console, mainly in the Data Tree and its associated toolbar:

- In the Data view, the toolbar now includes a switch between the previous Data Vault view and the new Computer view, where Data Vault nodes are grouped under Computer nodes. This view is particularly important for the Business Continuity feature, as Continuity folders also appear as child nodes under each Computer. For details, see Section 3.9.1.



- Filtering Data Vaults works as before but has an improved presentation across all three Console views, as well as in all object picker dialogs. A dedicated button allows switching between Local Data Vaults, All Data Vaults, and Favorite Data Vaults. Another button activates an additional filter row that looks and works the same as filtering in the Injection List columns.

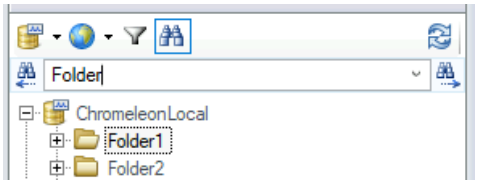


- The Data view toolbar now also includes a new Find button for locating data objects by name. For details, see Section 3.8.2.
- The toolbar now also includes a Refresh button for manually refreshing the Navigation pane. Automatic refreshing of the Data Tree has been improved to be more intuitive, such that changes made by other clients become visible sooner. The previous resource-saving behavior can still be enforced using the new UI Customizations global policy named **Limit Console Data Tree refresh to reduce resource consumption**.

In addition, Chromeleon 7.4.1 extends the use of the dialog that reports objects preventing users from performing certain actions. Introduced in Chromeleon 7.4 for folders that could not be set to read-only, in Chromeleon 7.4.1 the dialog is also used for other restricted operations such as Copy, Cut, Delete, Rename, or Send To.

3.8.2 Finding data objects in the Data Tree and in folders [797511]

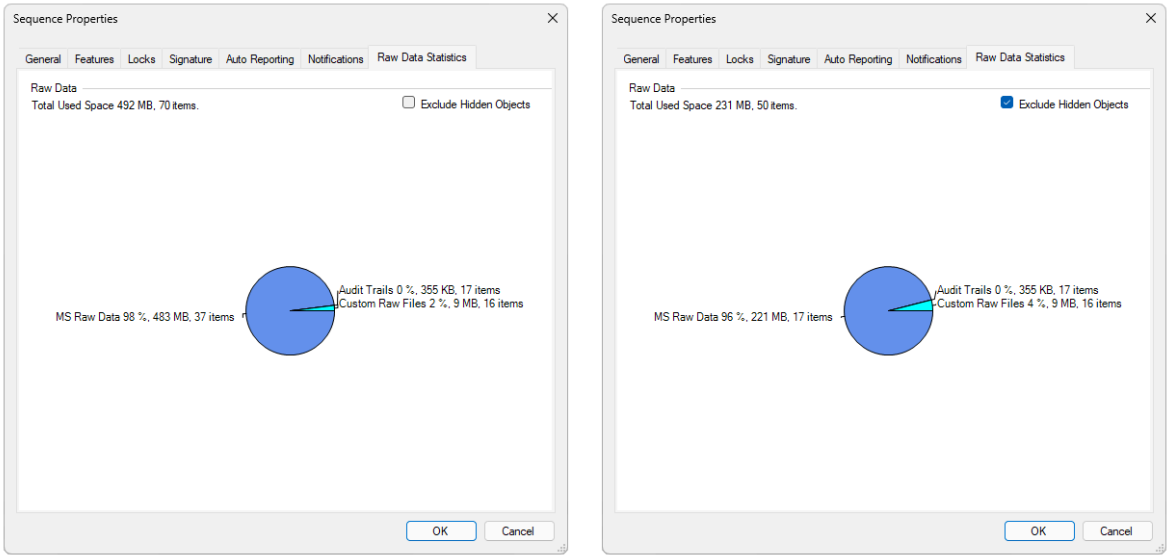
The improved Data Tree toolbar now includes a new Find button for locating data objects whose names contain a specified search term. When the Find function is activated, an additional row appears in the toolbar, like the Find function in the Injection List, supporting Find Next, Find Previous, and a dropdown list of recent search terms.



Note: In Chromeleon 7.4.1, the Find function is not restricted by data type. It searches the Data Tree and the contents of folders, but not the associated items of sequences.

3.8.3 Option to filter out hidden objects in Properties [429072]

A new option has been introduced in the Data Vault, Folder, and Sequence Properties dialogs to improve the clarity and consistency of displayed statistics. Users can now choose to exclude hidden objects (such as fixed calibration injections and their associated raw files) from statistical counts and raw data visualizations using the **Exclude hidden objects from statistics** checkbox.



The default behavior when opening new Properties dialogs is controlled by a new **UI Customizations** global policy named **Open folder and sequence properties with hidden objects excluded from statistics**.

Additionally, the Raw Data Statistics pie chart has been enhanced to include custom raw files, ensuring that totals and percentages are reported consistently.

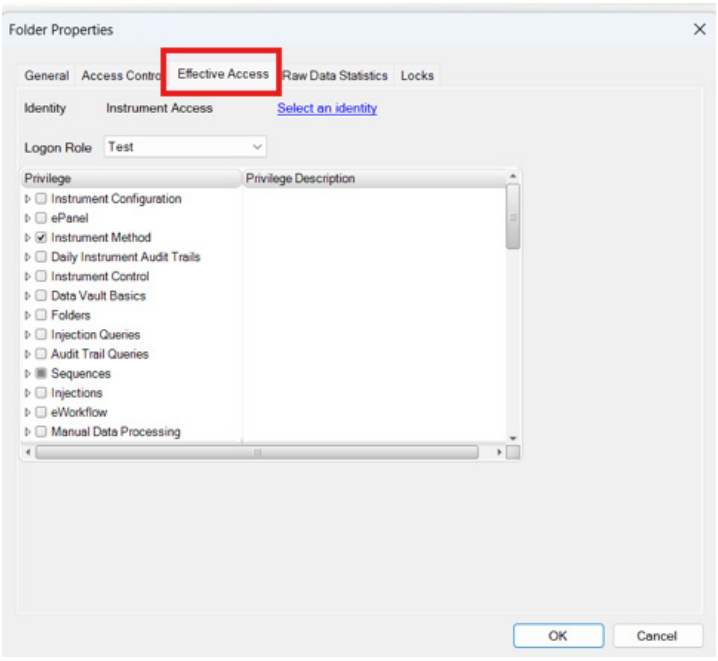
3.8.4 Effective access view for access control lists (ACLs) to show effective privilege set [363965]

This release introduces an Effective Access tab available from the properties of DataVaults and folders that provides visibility into the effective privileges granted to a selected identity (user/access group), and optional logon role, taking both role-based permissions and ACL settings into account.

With the effective access tab, users with the appropriate privileges can evaluate privileges that will be applied to a specific user or access group and optionally include a logon role to determine the resulting access rights.

Use of the Effective Access view requires the appropriate security privileges:

- Modify Folder Security Settings for folders
- Modify Security Settings for Data Vaults



3.8.5 eWorkflow instrument grouping and linking [794346]

Chromeleon 7.4.1 introduces instrument grouping and linking capabilities for eWorkflows. Instruments with similar configurations can now be grouped and linked within an eWorkflow, allowing a single instrument method to be associated with multiple compatible instruments.

The new functionality includes grouping of related instruments within an eWorkflow, linking compatible instruments for shared method assignment, drag-and-drop management of instrument groups and grouping, ungrouping, and renaming of instrument groups.

3.8.6 Designate a Template Sequence for Worklist-Based Sequence Creation [813003]

In Chromeleon, sequences can be created from worklists, including LIMS worklists based on XML import formats or CSV files. Previously, when creating a sequence from a worklist, users needed to ensure that the required sequence structure, columns, associated items, and custom variables were already available and properly aligned in the target Data Vault. This could require additional setup or manual adjustments, especially when laboratories wanted sequences created from worklists to follow a consistent predefined format.

This release introduces the ability to specify a template sequence for worklist-based sequence creation. Users can create or select a sequence that contains the desired structure, properties, columns, associated items, and custom variables, and identify that template sequence in the worklist used to generate the new sequence. When the worklist is imported, Chromeleon uses the specified template sequence as the basis for the new sequence, helping ensure that the created sequence follows the intended format. Sequence properties can also be adjusted from the worklist during import, allowing worklist-specific values to be applied while still using the template sequence as the starting point.

This reduces manual setup and post-import adjustments, particularly when worklists include custom variables or when laboratories need consistent sequence creation across Data Vaults and users. Chromeleon 7 Help provides examples of the required worklist structure, including how to specify the template sequence in the worklist.

3.9 Administration and auditing

3.9.1 Chromeleon NFP: Business Continuity Repository Improvements

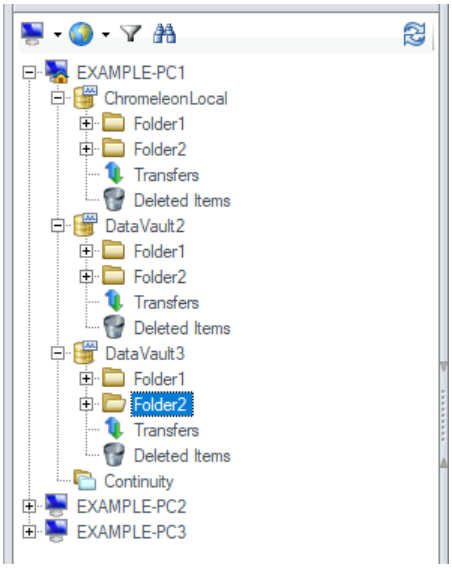
3.9.1.1 General improvements [791120]

Chromeleon 7.4.1 introduces several improvements to the Business Continuity Repository feature first released in Chromeleon 7.4.

Most notably, Continuity folders are no longer present in each Data Vault; instead, there is a single Continuity folder per computer. To display the Continuity folders, switch the Data Tree to the Computer view (see Section 3.8.1).

In the Administration Console, the feature is enabled similarly to Chromeleon 7.4. However, instead of specifying a source Data Vault, you must now specify a source computer.

Note: The Business Continuity Repository is now centered around XVaults, analogous to the Network Failure Protection mechanisms for remote sequence acquisition. Therefore, a computer must have an XVault to support this feature.



Due to differences between versions 7.4 and 7.4.1, it is strongly recommended that, after upgrading, you reconfigure the Continuity data source—from a Data Vault (used in 7.4) to a computer (used in 7.4.1).

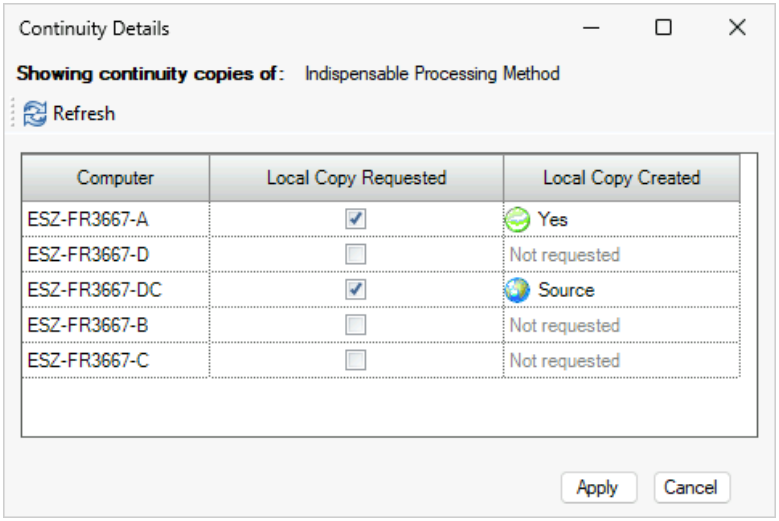
The following additional improvements are included:

- When a Continuity item is selected, the new **Go to Original** option navigates to the original item, if it is still available.
- When adding multiple items to Continuity, if some items cannot be added (for example, due to naming conflicts), the system identifies which items failed. In case of naming conflicts, you can either cancel the operation or proceed with the non-conflicting items.

3.9.1.2 Option to configure computers for individual Continuity items [866714]

Chromeleon 7.4 distributed copies of Continuity items to all Continuity repositories in the domain. Chromeleon 7.4.1 now allows you to select which computers should hold a copy of a given item.

For items that have already been added, this selection can be changed at any time in the **Continuity Details** dialog, which is now also displayed automatically when adding new items.



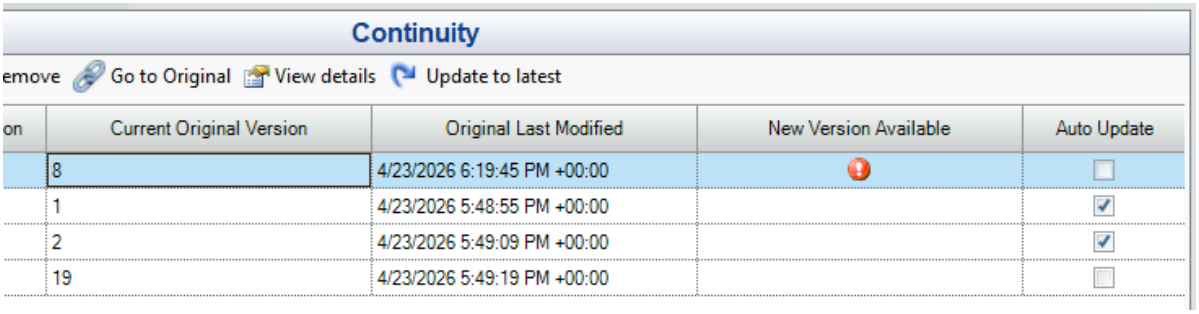
The newly introduced **Local Copy Requested** column selects all computers by default. To change which computers receive a copy of an item, the *Manage Continuity Items* privilege is required.

3.9.1.3 Option to update Continuity items if a newer version is detected [866711]

Chromeleon 7.4.1 enhances the Business Continuity Repository feature by continuously monitoring the originals of all items. The Continuity repository view now displays the version and last modification date of both the source Continuity copy and the original item, as well as information about whether a newer version of the original is available.

If a new version of the original item is available, users with the *Manage Continuity Items* privilege and with access rights to the original can use the newly introduced **Update to Latest** option to remove the previous Continuity copy and distribute the newer version in a single click.

Alternatively, each item now includes an **Auto Update** checkbox. When selected, the corresponding Continuity item is automatically updated as soon as a newer version becomes available. Changing the state of this checkbox also requires the *Manage Continuity Items* privilege and access rights to the original.



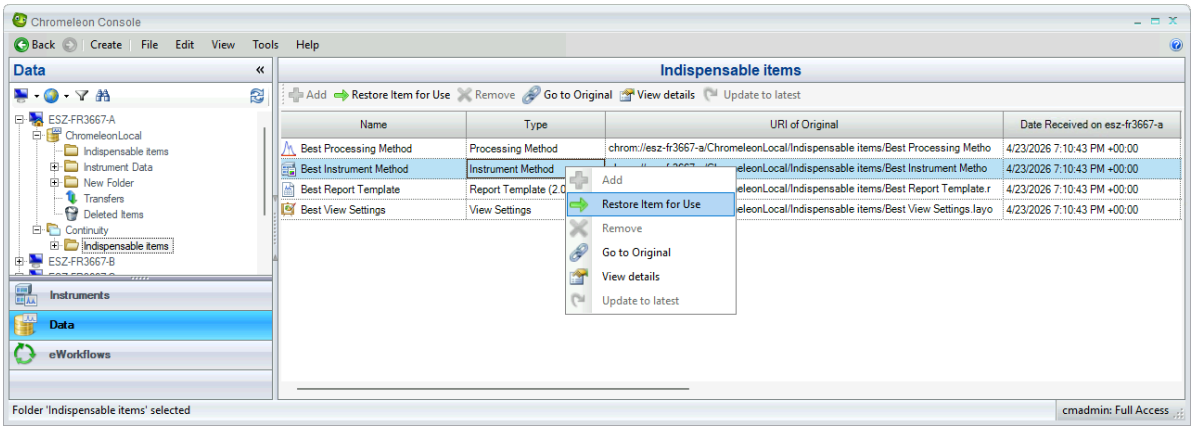
Note: Monitoring of originals is only supported by computers running Chromeleon 7.4.1. Originals from Data Vaults hosted on computers with older versions of Chromeleon are unable to provide the required information and the **New Version Available** values will never indicate that updating might be possible.

3.9.1.4 Adding folders as Continuity items [866713]

As in Chromeleon 7.4, Continuity repositories cannot contain multiple items with the same name if they are of the same item type. However, Chromeleon 7.4.1 introduces the ability to add folders as Continuity items, provided they meet the requirements.

Folders cannot be created or modified directly within a Continuity repository. Instead, they must be added in the same way as other Continuity items. The supported item types remain the same as in Chromeleon 7.4 (Instrument Methods, Processing Methods, Report Templates, and View Settings), but in addition, folders containing these items can now also be added. Folders that contain Sequences or subfolders cannot be added as Continuity items.

Once a folder is added as a Continuity item, it can only be deleted or updated as a whole. Settings such as target computers and auto-update apply to the entire folder. Items within such folders cannot be individually deleted, updated, or configured differently from the folder, but they can be individually restored for use if the originals become unavailable. If a folder added to Continuity changes in a way that the folder no longer meets the criteria for a Continuity item, the folder cannot be updated, even if auto-update is enabled.



Folders added as Continuity items respect their Access Control Lists. Users with restricted access might be unable to view, inspect, delete, update, or modify settings for these folders, or may not see them at all, depending on their privileges.

3.9.2 Export from audit trails and audit trail query results in CSV format [797521]

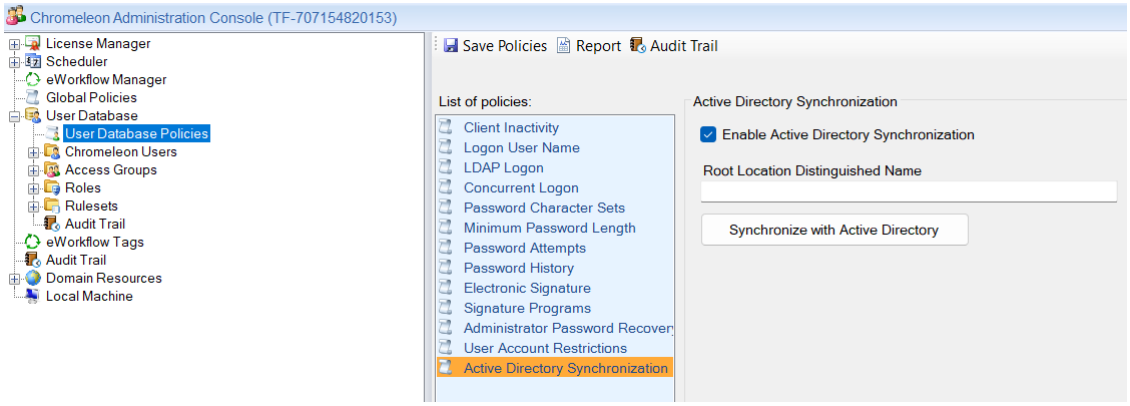
Chromeleon now supports direct export of data in CSV format from all audit trail types and from the results of all query types. This enhancement complements existing reporting capabilities by enabling quick and flexible data extraction.

Users can access the new **CSV Export** option from the updated **Report / Export** or **Print / Export** dropdown menus in the Audit Trail and Query viewers. The CSV export dialog allows users to specify the file location, export either selected or all rows, choose between displayed columns or all columns, and optionally restrict the export to a defined time range, where applicable.

3.9.3 Import of users from Active Directory (AD) into Chromeleon User Database [398982]

With this release, Chromeleon introduces support for synchronizing user management information with Active Directory, simplifying user management and administration in enterprise environments. Administrators can import users, roles, access groups, and

organizational units through a new Administration Console policy; Active Directory Synchronization.

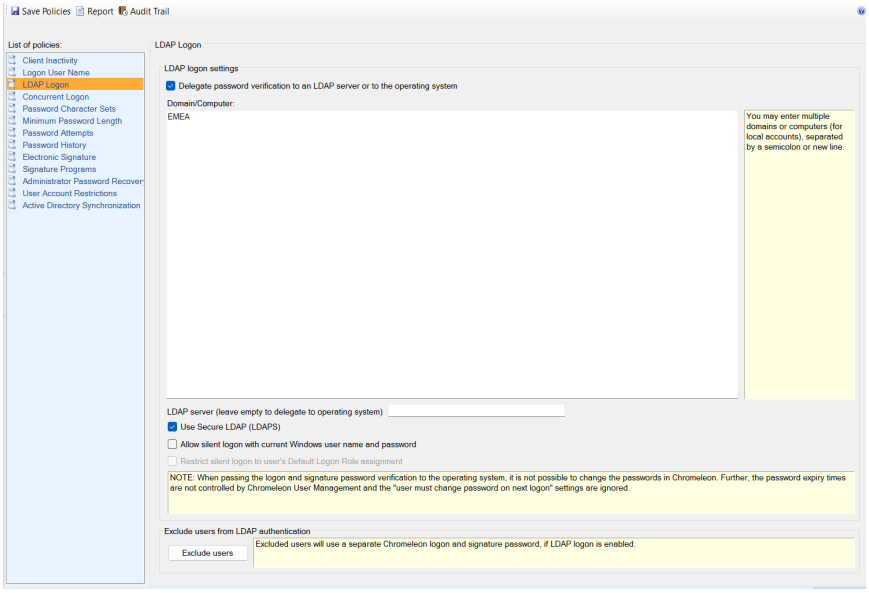


Administrators can configure synchronization settings, specify the root Active Directory organizational unit to be imported, and review pending changes before applying import updates.

The import supports the creation of user management information while preserving existing Chromeleon user data. Import of users from Active Directory into Chromeleon are captured in the Audit Trail.

3.9.4 Support for Secure LDAP (LDAPS) Authentication [746928]

Chromeleon 7.4.1 adds support for both LDAP and Secure LDAP (LDAPS) authentication, allowing administrators to select the preferred authentication protocol directly within the LDAP Logon policy in the Administration Console. Enabled in the LDAP Logon Policy; Administration Console > User Database > User Database Policies > LDAP Logon.



3.9.5 Simplified Channel Management Privileges [834676]

With this release, Chromeleon introduces updates to channel management privileges to provide clearer privilege definitions and more consistent behavior when creating, modifying, overwriting, and deleting channels.

The following privileges have been renamed:

- The Modify Finished or Interrupted Injections privilege has been renamed to "Modify Fields of Finished or Interrupted Injections". This privilege now applies only to modifying injection fields and no longer includes channel creation or deletion capabilities.
- The Manually Create or Delete Channels privilege has been renamed to "Manually Create Channels". This privilege now applies only to channel creation.
- The Delete Individual Channels privilege has been renamed to "Delete or Overwrite Individual Channel/ Audit Trail".

3.9.6 Privilege for managing vault conversions [870109]

A new privilege called *Manage Vault Conversions* was added into the *Data Vault Basics* privilege category. When it is granted, conversion of Data Vault to XVault and XVault to Data Vault is allowed.

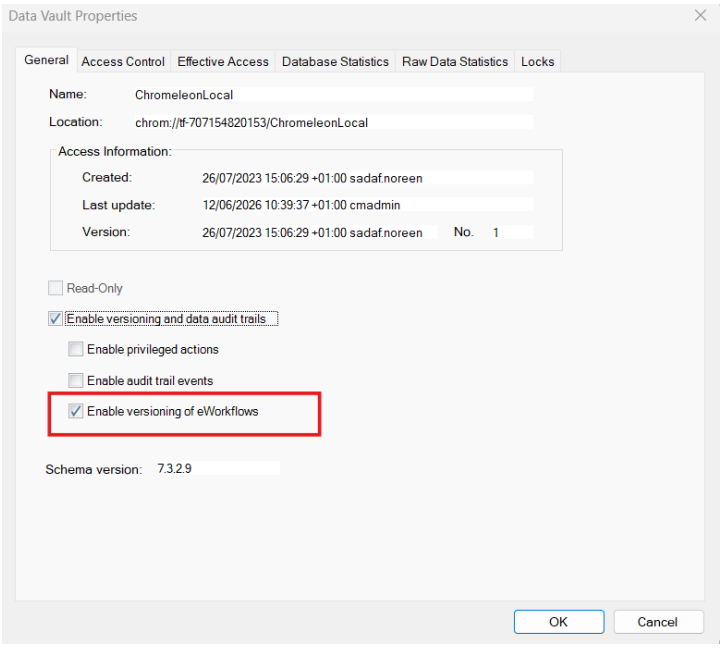
3.9.7 Audit Trail Logging for Compound Data Export Actions in MS Component Table [841715]

With the release of Chromeleon 7.4, a CSV/XML custom definition editor tool was introduced to support the import/export of information to/from the MS component table of the MS processing method.

With this release, Chromeleon records compound data export actions from the MS Component Table in the Data Audit Trail. Audit trail entries capture export details, including the export destination and any custom export definitions used.

3.9.8 eWorkflow Versioning and Audit Trail History [843067]

With the Chromeleon 7.4.1 release, versioning and audit trail support for eWorkflows has been introduced. eWorkflow versioning must be enabled through the properties tab at the Data Vault level.



When eWorkflow versioning is enabled for a Data Vault, a new version is automatically created whenever an eWorkflow is modified and saved. Each version is recorded in the Data Audit Trail.

Key capabilities include:

- Version creation for eWorkflows following modification and save
- Full audit trail history for each eWorkflow version
- Comparison of changes between versions
- Restore previous versions of an eWorkflow
- Track version information from within the Data Audit Trail

Limitation:

eWorkflows versioned using this feature are not compatible with Chromeleon versions earlier than 7.4.1, however, eWorkflows that are created in a 7.4.1 Data Vault without versioning enabled will be compatible with older versions of Chromeleon.

3.10 Remote sequence acquisition

3.10.1 Performance optimizations and general improvements [830931, 839158]

Remote sequence acquisition in Chromeleon 7.4.1 includes the following general improvements:

- Saving changes to a sequence downloaded to an Instrument PC from a remote client is now practically immediate.
- Downloads to the Instrument PC are now more robust—minor network issues are tolerated, and downloads automatically retry for up to 10 minutes before failing.
- Downloads to the Instrument PC can now be cancelled using the newly introduced **Cancel Download** button (analogous to the Cancel Upload button).

In addition, Chromeleon 7.4.1 introduces options to improve download speed:

- The **Transfer Parallelization** global policy for network data acquisition, if enabled, now also applies to downloads of MS raw files.
- Downloads of smaller raw files can be accelerated using the newly introduced **Network Data Acquisition** global policy, which specifies how many raw files can be downloaded simultaneously. If the **Transfer Parallelization** policy is disabled, simultaneous downloads also apply to MS raw files.

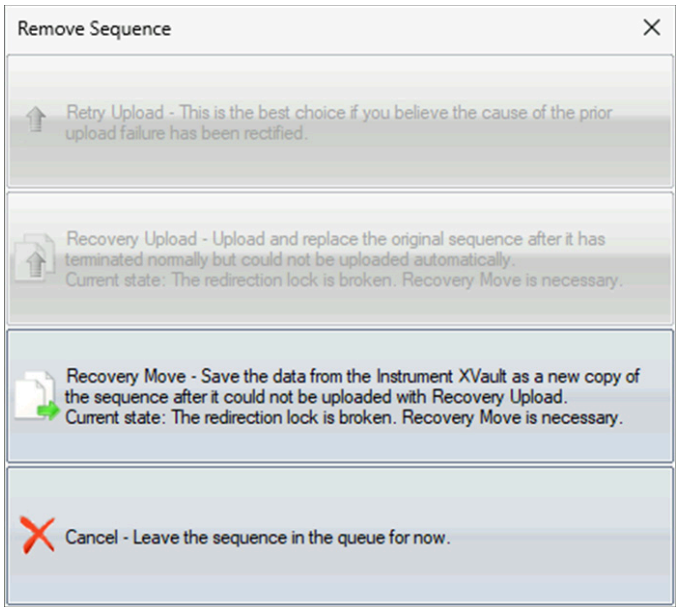
3.10.2 Improvements of recovery mechanisms [464203, 797487]

Chromeleon 7.4.1 introduces several important improvements to the mechanisms that help users recover from situations where standard synchronization between the Instrument PC and the network sequence fails:

- The recovery options previously named **Manual Upload** and **Manual Move** have been renamed for clarity to **Recovery Upload** and **Recovery Move**.
- **Recovery Upload** can now be attempted automatically whenever a normal upload fails for any reason other than recoverable network issues or user cancellation. This

behavior is controlled by the newly introduced **Network Data Acquisition** global policy *When upload fails, automatically attempt Recovery Upload*, which is enabled by default.

- When recovery options need to be considered, users are now provided with improved guidance. System conditions are evaluated, and if **Recovery Upload** is not possible, this option is disabled and a dedicated audit trail entry is written to the sequence's data audit trail, indicating that a **Recovery Move** is necessary.

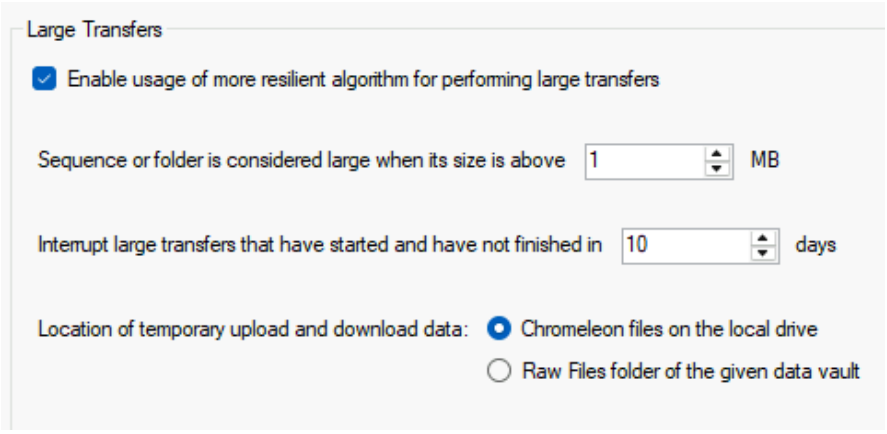


3.11 Large transfers

3.11.1 General improvements [385284]

Large transfers in Chromeleon 7.4.1 include the following improvements:

- Prior to Chromeleon 7.4.1, all temporary files related to large transfers were stored together with other internal Chromeleon data on the local disk. This could cause issues when transferring very large amounts of data. Chromeleon 7.4.1 therefore introduces an option to store temporary files for large transfers in the locations where the source and destination Data Vaults store their raw files. This option can be enabled via a newly introduced setting in the **Large Transfers** global policies.



- The **Large Transfers** global policy option related to pre-transfer compression has been removed. To accelerate large transfers, it is recommended to enable transfer parallelization.
- A new option has been added to the Transfers view. In addition to viewing transfers originating from a given Data Vault or computer, it is now also possible to view transfers incoming to a given computer.

3.11.2 Support for transferring folders [839172]

Chromeleon 7.4.1 extends large transfer functionality to folders. If large transfers are enabled, the conditions for transferring sequences as large transfers remain unchanged. In addition, the following now applies:

- Large data transfer for a folder is triggered only when a single folder is pasted into a destination that does not already contain a folder with the same name. When multiple folders are transferred, the standard copy-paste behavior is used.
- If a folder contains one or more linked sequences, large data transfer is not supported, and the standard copy-paste mechanism is used.
- Descendant folders that are inaccessible due to ACL restrictions are automatically excluded from the transfer.

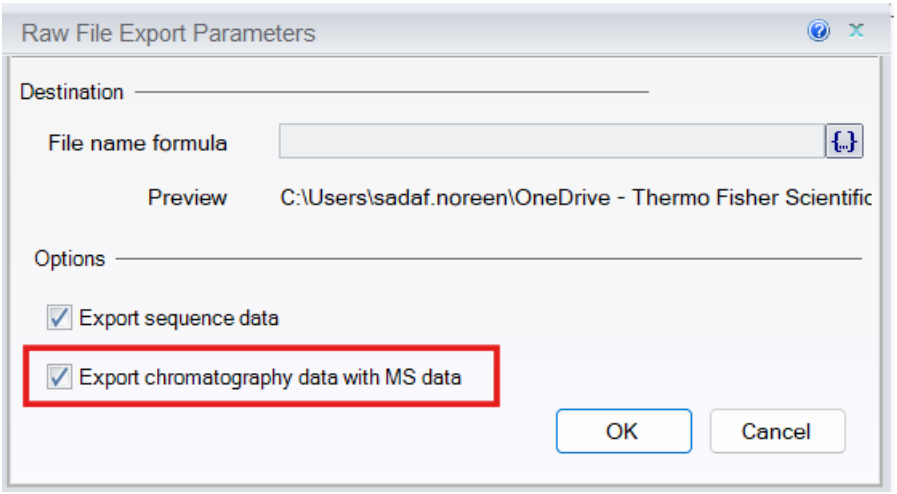
3.12 Data Import/Export

3.12.1 Export of chromatography and MS data to a single .Raw file [33835]

Chromeleon 7.4.1 introduces support for exporting chromatography and mass spectrometry (MS) data together in a single Raw file.

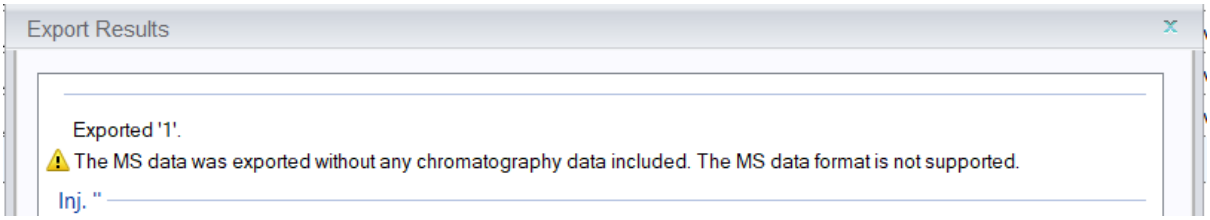
A new export to Raw file format option has been introduced, "Export chromatography data with MS data", which allows chromatography data acquired alongside MS data, including 2D and 3D detector signals and additional acquired signals to be included in the exported RAW file.

This export option is enabled by default. When enabled, all MS and non-MS data associated with an injection is exported into a single Raw file which can be opened in compatible MS processing applications such as Xcalibur and FreeStyle. If no chromatography data is available for a specific injection, the Raw file is still created, and a notification is displayed in the Export Results dialog.



Limitation

This export functionality requires supported mass spectrometry drivers. When exporting data acquired using older MS drivers that do not support inclusion of chromatography channels in the MS raw file, Chromeleon displays an informational message.



In this case, the MS data is exported as usual, but the chromatography data is not included in the exported MS raw file.

This behavior is consistent with previous Chromeleon releases.

4 Resolved issues

This chapter describes the issues that have been resolved with the release of Chromeleon 7.4.1 only. For issues that have been resolved in previous releases, please refer to the Release Notes for the relevant release (version 7.4 or earlier).

Other trivial and minor issues may have been resolved but are not mentioned here. If you require information about the status of an issue observed in a Chromeleon 7 release, but which is not listed here, please contact your local Thermo Fisher Scientific representative for more information.

The numbers in the first column of the table below refer to the Thermo Fisher Scientific tracking IDs.

ID	Description
150667	**Data Audit Trail:** An issue was identified that resulted in the creation of a data audit trail entry for an injection, although this injection was actually not changed. This happened, for example, when an injection was cut out (e.g. with CTRL-X), and the cut operation was undone, and, additionally, another injection located above in this injection list was added or deleted, so that the first injection was moved to another position in the injection list. In this case, an entry with operation type "moved" was created, although the user did not move this injection. This has been fixed. This combination of operations will no longer create a misleading data audit trail entry.
183221	**Chromeleon Studio - Reporting: Report Designer:** The formula is giving out an error mark "!", with a message "Cannot compare numeric and error". Issue, which caused that table variables showed wrong value when pointing on column with spreadsheet formulas, is fixed.
185378	**Injection Audit Trail:** Chromeleon 7.4.1 fixes an issue where an injection audit trail could display the "Created" entry of its Chromatogram at the correct position and with the correct timestamp but with an incorrect injection version. Specifically, in cases where changes were made to the injection before it was acquired and then modifications to its chromatogram occurred later, the creation entry of the chromatogram would incorrectly report the corresponding injection version as 1. This issue is now fixed, and the creation of the chromatogram is attributed to the correct version of the injection.
195555	**Chromeleon Studio – Reporting 2.0:** Spreadsheet function TRUNC() in the report designer truncates numbers by their binary coded representation which is not 100% identical to their corresponding decimal representation which is either entered manually or formatted to a certain precision by a corresponding formatting expression. Thus, it might happen that the TRUNC() function results in a truncated number which is not the number you would expect when truncating its decimal representation. Example: TRUNC(1,2671; 4) returns 1,2670 instead of the decimal expected 1,2671. Issue is now fixed in Reporting 2.0, but it persists in Reporting 1.0.
198957	**ISQ EC/EM or GC ISQ/TSQ**: When using either the ISQ EC/EM or the GC ISQ/TSQ series with driver versions prior to 5.2.3 there exists the possibility of sequence interruptions where the injection audit trail records the message "Error initializing the raw file. CouldNotCreateRawFile". This issue has been fixed with the latest driver release, version 5.2.3.
217301	**Chromeleon Console:** An issue was found that affects folders with a name containing extended Unicode characters (characters that require 32 bit in UTF-16 encoding, typically seen in less common Chinese and Japanese characters). If such a folder on the top level of a data vault is created, it cannot be renamed, moved or deleted. This affects only data vaults based on Microsoft SQL Server, Oracle data vaults are not affected.

	This issue has been fixed in 7.4.1 for new data vaults. New standard data vaults and XVaults will be created with a collation that handles all characters correctly. It is also recommended to create SQL Server databases for new multi-user data vaults with the Latin1_General_100_CI_AS collation. Using the older Latin1_General_CI_AS collation is no longer recommended, but continues to be supported by Chromeleon.
233201	**Chromeleon Console - Favorite Instruments:** Some Chromeleon users reported that their lists of Favorite Instruments occasionally changed for unknown reasons. Instruments previously marked as favorites no longer appeared as such and had to be re-added. This issue has now been fixed. An Instrument can be automatically removed from the Favorite Instruments list only under the following conditions: 1) the Instrument has been renamed, 2) the Controller PC has been renamed, or 3) the Controller PC's domain has changed. If none of these conditions occur, an Instrument marked as a favorite can no longer become unfavorited for unknown reasons.
249777	**Chromeleon Online Help - Sequence Statuses and Instrument Operation License:** The Help topic describing Sequence statuses previously listed the statuses without explaining how displaying them is affected when the User does not have the "Instrument Operation" license. In that case the User has no access to the Instrument and its Queue, and hence only three basic Sequence statuses can be displayed: New, Incomplete and Run Finished. Further states (like Connecting, Queued, Running, Downloading, Uploading, etc.) depend on accessing the Instrument and its Queue. The Online Help is now updated to clearly differentiate between the basic statues and the statuses that are available when the "Instrument Operation" license is granted.
254003	**Custom variables:** A sequence with the invisible character 0x1F (unit separator) in a custom field text of a custom injection variable would abort with an error message "hexadecimal value 0x1F, is an invalid character". This has been fixed.
279701	**Thermo Fisher Scientific MS:** Opening the method editor or opening the online help resulted in an error "System.OutOfMemoryException". This has been fixed in Chromeleon 7.3.2.
333914	**Privileges:** With this release, channel privileges have been updated. Users without the "Delete or Overwrite Raw Data Channel or Audit Trail" privilege can no longer delete or overwrite channels.
350368	**Chromeleon Studio:** In certain cases, UV signal extraction from 3DFIELD data did not always use the intended wavelength range during extraction. Depending on the selected wavelength, bandwidth, and wavelength resolution, the extraction process could use the preceding wavelength point or, for bandwidth-based extraction, average signal values from a range that did not fully include the requested interval. This has been fixed with the introduction of the new feature, UV Extraction from 3DFIELD Data [415359], described above.
370926	**Mass Spectra plot:** Mass Spectra plot offers a special visualization of SIM or SRM scans that typically have only a single data point: if quantitation or confirming peaks have chromatogram extraction settings with SIM or SRM filters specified, the nearest spectra to the specified retention time for each ion chromatogram filter are retrieved and merged into a single mass spectrum, a so-called component spectrum. This spectrum composition fails with profile SIM and SRM scans: the scans are converted to centroid scans and merged but visualized as profile spectra. Now with the new Chromeleon release, spectrum composition is not performed for profile scans. In this case only a single profile apex scan is shown, whereby the MS filter of the currently selected quantitation or confirmation XIC is applied.
379007	**Orbitrap Hybrid Series:** With the Method Editor, a full scan MS method created in Quan view could result in incorrect scan range settings during method execution. For instance, while a Full scan MS instrument method would include a scan range of m/z 100-500, the instrument would execute the acquisition with a range of m/z 100-1000. This has been addressed with the with Orbitrap Hybrid Series driver version 5.1.
417062	**Issue resolved:** Command-line installation of Chromeleon 7.3.2 on Windows 11 now correctly honors the /no-restart option.

	Previously, installation could require an unexpected system restart, causing the installation to fail with error codes -2147185721 or -2147205120. This issue has been fixed, allowing command-line installations to complete successfully when the /no-restart option is used.
419872 **436977**	**Vanquish Binary Pump:** Using Smart Shutdown or Smart Standby with a Vanquish Binary Pump prevented the system from calculating the eluent consumption for the Queue. This has been corrected.
431800	**Chromeleon Console:** Chromeleon Console freezes when browsing data vaults. Issue is now fixed.
434236	**Workists:** When generating sequences from Worklist Exchange worklists (*.wlex), Chromeleon now preserves calibration component include/exclude selections from the referenced Processing Method. Previously, some worklist-generated sequences marked all components as included even when exclusions were defined in the Processing Method.
443980	**Chromeleon Console:** Sequences with large attached files can cause the Chromeleon console to become unresponsive and consume a lot of memory (RAM). This happened when the sequence was displayed in the console, so that the list of the associated items was visible. This has been improved: Chromeleon will no longer become unresponsive because of the file attachment and will consume less memory in this case.
442771	**Chromeleon Studio - Reporting 2.0:** Channel selection does not work correctly for export to text format (raw data). Issue is fixed.
448871	**Sequence Data Audit Trail:** After changing just the column width in the injection list and saving these changes the corresponding data audit tail record showed that the injection column 'Volume' has become visible whereas the injection column 'Volume [µL]' is removed. With 7.4.1 this does not happen anymore. Just changing the width of some injection column will only be reported as a Layout change in the data audit trail of the sequence.
449351	**SII framework:** The Home ePanel could display incorrect sequence-related information; a random injection identifier (GUID) and an incorrect method name. This has been resolved.
470292	**Chromeleon Studio - Reporting 2.0:** Page layout for Chromeleon 7.3.2 MUa in print preview is set as default 'letter' for page layout for report designer templates 2.0. Issue is now fixed.
494274	**Copying Processing Methods:** In certain scenarios, most likely when using Fixed Calibration in the processing method of a sequence and having multiple versions of the processing method where Fixed Calibration has been switched on and off multiple times, it could happen that an error message telling 'field was empty' popped up when trying to copy such a sequence or the affected processing method. In this case Chromeleon has been looking for a raw file in used for Fixed Calibration although Fixed Calibration was not enabled at this time. This unnecessary check is now removed. Such sequences can now be copied successfully with Chromeleon 7.4.1 again**.**
594528	**Custom Variables:** When using custom variables in a sequence having the same name but a different case certain operations with the sequence (Copy, Save As, Download/Upload to/from an IPC) didn't work. The operation showed an error message telling 'An item with the same key has already been added'. This is fixed for Chromeleon 7.4.1. These operations are now working correctly for such sequences.
606859	**Data Audit Trail:** After copying an injection containing raw data to another sequence the corresponding data audit trail (column Additional Info) showed the internal URL of the original injection and the newly created injection including the corresponding sequence name and folder path only. With Chromeleon 7.4.1 this URL - for both the original and newly created injection - is now extended with the injection number, thus clearly identifying the original and newly created injection record. The injection number is added as a suffix to the corresponding URL of the injection, e.g., as chrom::///<Datavault Name>/<Folder Path>/<Sequence Name>.seq/<Injection ID>.smp (#<Injection Number>)
607655	**Calibration Levels:** Previously, entering a Calibration Level name longer than 64 characters could cause an unexpected error when working with compatible Data Vaults (Chromeleon

	versions prior to 7.3.2). The application now consistently limits Calibration Level names to 64 characters across all data vault types, preventing this error from occurring.
633242	**Chromeleon Studio - Reporting 2.0:** when conditional formatting is used, text alignment gets corrupted. Issue is now fixed.
744575	**Chromeleon Studio - Reporting 2.0:** Conditional formatting issue preventing user to edit a rule in which icons are used is now fixed.
749630	**Chromeleon Studio - Reporting 2.0:** View Setting 2.0: Error in "ChromatogramZoomAreaData" - Object reference not set to an instance of an object. Issue is now fixed.
763499	**PerkinElmer Clarus 580 GC:** When selecting column oven mode options 'Ramped flow' or 'Ramped velocity' Chromeleon would crash with an error message "Nullable object must have a value.". This has been fixed.
763520	**Chromeleon Studio - Report Designer:** Report Template v2.0 without data is missing the "Apply Sequence" button in the Page Layout tab. Issue is now fixed.
764666	**Chromeleon 7 Application Processing Service:** The Chromeleon 7 Application Processing Service is executing the background processing for MS-Sequences if the MS Processing Compatibility Mode 'Chromeleon 7.3.2 or later' is enabled for the sequence. Yet when the corresponding windows service started it could happen that the connection to the database couldn't be properly established. For a subsequence processing request the user was notified with the message 'The selected sequence is waiting to be processed on the data processing server. Current position in queue: 1'. The only way to get the processing server running was to restart the corresponding windows services. Yet ordinary users are not allowed to execute a restart of a windows service. With Chromeleon 7.4.1 this is not necessary anymore. The Chromeleon 7 Application Processing Service will now recognize the failing connection to the database when the service is started and will retry the connection until the required or pending processing requests can be executed.
767297	**Performance - Fixed Calibration & MS Sequences:** When activating or updating a fixed calibration in the processing method editor for a MS Sequence it could take several minutes until the fixed calibration update was completed even when using the option to not copy the injection raw files into the processing method. With Chromeleon 7.4.1 the time span to activate or update the fixed calibration is now much smaller than before.
768405	**Chromeleon Scheduler:** Fixed a shutdown/renewal race where the datastore could be removed while async writes were still in progress. The shutdown path now waits for the write pipeline's completion signal rather than a local event that never fired. This avoids rare I/O errors and reduces the risk of partial writes or losing the last in-flight scheduler updates. Shutdown remains bounded and best-effort, with more consistent on-disk data.
768527	**Chromeleon Studio – Processing Method:** In a Chromeleon processing method, concentration levels (used for calibration) and custom component variables should not have the same name to avoid confusion. However, this was not consistently enforced: • When creating a custom variable first (e.g. "01"), and a calibration level with the same name thereafter, the latter operation was prevented (correct). • But when the calibration level was created first, and a custom variable with the same name thereafter, this operation was allowed (not correct). • When a processing method with such a naming conflict was loaded, this resulted in an error, and loading was not possible (not correct). This has been corrected: • It is no longer possible to create a custom variable with the same name as an already existing calibration level. • But when a processing method with such a naming conflict already exists (because it had been created with a Chromeleon version without this fix), the method can still be loaded. Since custom variables and calibration levels are two different things and are handled separately by the Chromeleon code, evaluation is still working correctly.

790452	**Data Audit Trail:** If the audit trail of a sequence contains a high number of versions including versions of multiple processing methods or other associated items in the sequence it could happen that certain operations with the sequence (for example, copying the sequence to another location, creating an audit trail report with change details) ran into an Out Of Memory Exception Error. Sometimes in this case Chromeleon became unresponsive or crashed after some time. In Chromeleon 7.4 and 7.4.1 operations with such sequences which need to load all versions including the ones for associated methods and the corresponding audit trail have been improved in order to avoid unnecessary memory consumption, and the probability of issues has been reduced.
769085	**Chromeleon Studio - Reporting 2.0:** When using multiple channels within an Integration table, the next (column) button in the table properties does not work. Issue is now fixed.
782277	**Integrion HPIC:** Sometimes the Integrion HPIC instrument audit trail would get flooded with pump pressure messages. This has been fixed in Chromeleon 7.4.
784478	**Admin Console – Rulesets:** Previously, modifying specific Processing Method columns (Channel, Component Type, Left/Right limits, Factor, Concentration Unit) incorrectly required both the specific "Modify …" ruleset and the "Modify Calibration Type" ruleset to be enabled. This has been resolved, so each of the processing method columns; Channel, Component Type, Left/Right limits, Factor, Concentration Unit can be controlled solely by its own "Modify …" privilege, and "Modify Calibration Type" is no longer required.
790291	**Chromeleon Studio:** eReport creation takes 20-30min to complete. Issue is now fixed.
792566	**Sequence:** Sequence of instrument methods shows only layout of the last configured module. Issue is now fixed.
798166	**Tentatively Identified Peaks:** When opening the pane 'Tentatively Identified Peaks' for a chromatogram with lots of peaks, especially very small ones, it could happen that an unexpected error telling 'Index was outside the bounds of the array' appeared in the pane window. This is now fixed with Chromeleon 7.4.1.
804580	**Inuvion:** When multiple Inuvion IC systems were configured as one instrument, the modules were not duplicated in the Instrument Method page. This has been fixed in Chromeleon 7.4.
805539	**Chromeleon Studio - Reporting 2.0:** Global formulas (text, if, abs) do not work in combination with most Group-Statistic formulas. Issue is now fixed.
805569	**Instrument Controller -** The Agilent G1888 driver could randomly disconnect during idle periods or sequence acquisition. This was caused by invalid or incomplete status messages and has been resolved.
806972	**Chromeleon Studio – Left and Right Integration Limits:** When using integration limits for a component (component properties Left/Right Limit) and the corresponding peak in the chromatogram contains rider peaks the area computation was not correct. Instead of just computing the area between the left and right integration limits the computed area has been subtracted by the area values of all rider peaks which belong to the main component peak. This could even lead to negative values for such a component peak. This has been fixed for Chromeleon 7.4.1. **Review Recommended:** This fix corrects an issue that could affect calculated peak area results compared to previous releases. Customers who used component left and right integration limits with rider peaks should review potentially affected results.
807751	**Privileges:** Enabling the Deny checkbox for the Full Access in the access control list of a data vault role now correctly denies the privilege, preventing users from modifying custom variables.
807845	**eWorkflows:** When appending samples to a running sequence in Chromeleon 7.3.2, the data in the first appended line reverted to the default values listed in the eWorkflow, rather than retaining the changes made in the launch program of the eWorkflow. This has been resolved and changes are now correctly reflected in the appended injections.

808967	**Licensing:** Hardware Monitoring service no longer consumes a DDK license, it just checks for its presence in a way that doesn't conflict with Instrument Controller Service
809066	**Chromeleon Studio - Reporting 2.0:** table.GroupSum returns 'n.a.' when a nested parameter is used. Issue is now fixed.
816108	**Licensing:** A race condition was identified in the application of licenses to the Network Failure Protection (NFP) cache on Instrument Controllers (IPCs). This issue intermittently resulted in the Hardware Monitoring Service (HMS) overwriting the Instrument Controller licenses that should be provided by the License Service. Consequently, on network failure, the IPC did not have the cached Instrument Controller license available to continue operations, potentially leading to failed sequence injections. This has been resolved and now on network failure the NFP operation continues as expected and the Instrument Controller licenses are correctly applied and cached which prevents the overwriting of licenses and ensures reliable operation during network failures.
817090	**Chromeleon Console - Instruments**: the message "Connection to this instrument is taking longer than expected" appears either connecting remotely or directly from IPC. Issue is now fixed.
820514	**Chromeleon Studio:** Performance issue (interactive results pane @summary sheet) when processing results due to default Windows printer being offline. Issue is now fixed.
821796	**Mass Spectra plot:** When enabling special label options like 'Show noise' or 'Show predicted chemical formula', the labels disappeared for Profile mode spectra. This issue is now fixed.
824929	**MS Components plot:** MS Components plot with multiple injections pinned and SmartLink enabled: If a component tile is clicked different to the currently selected one, it is possible that the scroll position of the MS Component grid jumps to a position where the clicked tile is not visible anymore. With the new Chromeleon release the scroll position of the MS Components grid stays now stable, and the clicked tile remains visible.
826894	**Reporting:** Raw data export to TXT/CSV behaves differently for file renaming/overwriting between reporting 1.0 and 2.0. Issue is now fixed.
827286	**Chromeleon Studio - Reporting 2.0:** Unable to save a Report 2.0 template when adding Fraction table. Issue is now fixed.
827341	**Instrument Configuration Manager:** If an IPC had a hostname or fully qualified domain name exceeding 15 characters, the Instrument Configuration Manager would truncate the value at 15 characters. This would cause the DNS check against this value to fail as no DNS records exist for the truncated value. This has been fixed, now the IPC name is truncated at the first dot (if any) and fully qualified host names can now be used for the connection.
827907	**Audit Trail:** When using a custom injection list column in Internal Standard Options, the Data Audit Trail stores the 'IntStd Column Name' as a GUID (globally unique identifier) instead of its actual name, preventing users from identifying the original IntStd column name. Issue is now fixed.
828046	**ePanel:** Message 'Chromeleon was unable to establish a connection to the instrument "NAME" on "PC".' observed on the ePanel in a networked environment. Issue is now fixed.
829609	**AnDI/CDF Export -** Chromeleon variables; especially injection processing methods and instrument method names failed to export correctly to AnDI/CDF due to alias mismatches. This has been resolved, and these variables now export properly.
834233	**ICS-6000:** With two suppressors, the suppressor property CurrentSet was missing from the Instrument Method Script. Now the Instrument Method Script shows the CurrentSet value for both selected suppressors. This has been fixed.
836652	**Export:** In rare cases, importing a Bruker CDF file could complete without displaying an error message, but no data was imported. This occurred when duplicate x-axis values were present in the exported file. Error handling in Chromeleon has been improved and now when duplicate values are detected, an appropriate error message is now displayed indicating that the raw data was not imported.

839844	**Markes Thermo Desorber:** An incorrect ready check warning, when RecollectionType was explicitly set to None in the method script has been resolved. Re-collection now works as expected when the sequence is set up with injection custom variables as documented in the online help.
841809	**Chromeleon Console – Paste object:** In the Chromeleon Console, it was previously possible to paste the same object from the clipboard into the same destination multiple times while the first paste operation was still running. After the first paste operation completed correctly, subsequent paste operations resulted in error messages. This issue is now resolved and pasting an object into the same destination more than once is no longer possible.
842271	**Inuvion:** For an Inuvion system, plugging in a suppressor used to turn ON the pump, when instead the pump should be turned on when the Suppressor mode is turned 'ON'. This has been fixed. Now if a suppressor is plugged in at runtime, the pump will not be turned ON automatically until the pump pressure is set and the Suppressor mode is turned 'ON'.
842696	**Chromeleon Qualification Wizards**: Fixed IQ/OQ/PQ and Station Qualification failing at queue preparation when sequences require acquisition approval (error: "sequence has not been approved for acquisition"). Qualification now prompts for an electronic signature when needed and approves generated sequences, reusing the signature for the run where applicable.
842934	**Chromeleon Admin Console:** Discovery Local Cache Service unexpectedly removes running Chromeleon Consoles from Domain Resources. Issue is now fixed.
846198	**SDK:** Fixed an issue where SDK service applications could fail to create or update sequences from WLEX worklist files when privileged actions and sequence modification policies requiring comments or signatures were enabled. The SDK no longer attempts to show an interactive privileged-action dialog in non-interactive service mode.
847803	**eWorkflows:** The values set in the Column properties are not used in the created sequence. Only the values from the cells in the Sequence Layout grid are used. To clarify this, setting default values for Column properties has been disabled. This also affects the Replicate ID field which does not populate with the default value set in the Table Columns because the value is taken from the sequence layout grid. .
848411	**Chromeleon Studio – Reporting 2.0:** Consolidated Table slow down with view settings 2.0. Issue is now fixed.
849585	**Chromeleon Architecture – Discovery:** Discovery resources are not visible. Network Proxy server is not supported within Chromeleon infrastructure. Installation guide was updated.
849767	**Chromeleon Studio - Reporting 2.0:** Exporting sequence data from CM Studio's Report Designer or from CM Console (Report Template 2.0) is limited to 1 export format at the time. Limitation was removed.
849804	**Vanquish FLD:** With the Vanquish FLD, error messages sent by the firmware were displayed in an internal format. While all information was present, the format was hard to interpret, and the text was not localizable.
850131	**PDF Export:** Format of chromatogram copied to MS Word changes after document is exported to PDF. Issue is now fixed.
851474	**Chromeleon 7 Application Processing Service:** This service is executing the background processing for MS Sequences if the MS Processing Compatibility Mode of the Sequence is set to *Chromeleon 7.3.2 or later*. Yet it could happen that when the corresponding windows service started, the connection to the database couldn't be properly established. For the subsequent processing request the user was notified with the message *'The selected sequence is waiting to be processed on the data processing server. Current position in queue: 1'*. The only way to get the processing server running was to restart the corresponding Windows services. With Chromeleon 7.4.1 this is not necessary anymore. The Chromeleon 7 Application Processing Service will now recognize the failing connection to the database when the service is started and will retry the connection until the required or pending processing requests can be executed.

856329	**Chromeleon Studio - Reporting 2.0:** If option "show only last row of each group" is selected in Grouping Options of properties of relevant report tables, hidden rows are also exported. Issue is now fixed. In mentioned report tables, user may now either select to hide remaining rows or remove remaining rows.
856655	**Chromeleon Console - eWorkflows:** eWorkflows from MultiUser Data Vaults didn't show up in Chromeleon temporarily (when eWorkflows category was open as initial category after Chromeleon startup). Issue is now fixed.
857917	**Thermo MS drivers - Orbitrap Hybrid MS:** With an Orbitrap Hybrid MS, pressing F1 on the Thermo MS Tuning ePanel to open the online help in some instances would result in an error "Unhandled exception: The calling thread cannot access this object because a different thread owns it." and would cause Chromeleon to crash. This has been addressed with the Orbitrap Hybrid Series driver version 5.1.
858979	**Fixed calibration synchronization:** When updating a fixed calibration while any source calibration standard is in preparing or running state, it is possible that the raw data of the not finished injection are cut off and consequently integrity check for this injection will fail. This issue is now fixed by not allowing running injections to be used as a fixed calibration standard.
859020	**Online Mass Spectra Plot:** With Chromeleon 7.4.1 it is possible again to see the currently acquired mass spectra in mass spectra plot during an injection run. The performance issues with permanently updating of mass spectra in an instrument's ePanel are fixed.
859386	**Chromeleon Architecture - Discovery Web Service:** Overflow Exception encountered during update of DiscoveryResources.sqlite. Issue is now fixed.
860444	**Load Balancing and Global Policy FQDN:** When using a load balanced multi-user data vault and the option 'Use Full Qualified Domain Names' (FQDN) in the section 'Host Name Resolution' of the Global Policies in the Chromeleon Administration Console is enabled, the download of sequences from a the data vault failed if the main data vault server couldn't be connected. This issue is now resolved.
861132	**Network Data Acquisition:** If a sequence is displayed in the Console while it is downloaded for acquisition to a remote instrument, then in some cases the Console is expected to switch automatically from displaying the original data to displaying data located on the Instrument (whereupon the Sequence Editor appends the sequence name with the parenthesized name of the Instrument). This is the case for sequences downloaded to MS instruments viewed from any Client in the domain, and for sequences downloaded to non-MS instruments viewed from the Instrument PC itself. In Chromeleon 7.4, this automatic switching was always correct if the sequence was first queued and only then started, but the switching was sometimes broken if the sequence was started directly without queuing first, especially if the sequence contained no finished injections. The User then needed to either navigate to View > Refresh, or press F5, or to navigate to a different item in the Console and then return back to the running sequence, in order to perform the switch of the displayed data manually. Without this manual refresh, the running sequence would display the original data and the sequence thus could not be modified. This was just a User Interface issue, and it did not in any way threaten integrity of the data. In Chromeleon 7.4.1, this issue is now fully resolved.
861301	**Chromeleon Discovery Setup:** Discovery Configuration: Unhandled exception when changing domain. Issue is now fixed.
861545	**Reporting:** When auto-reporting after each injection was enabled for export data, data could be exported only after the final injection of a sequence instead of after each injection if User Mode was disabled. This issue has been resolved.
864001	**Console - Non-Targeted MS:** Users who upgraded to versions greater than 7.3.2 MUc experienced an issue where the NTMS (Non-targeted MS Chromeleon data processing tool) was not working correctly, resulting in incorrect ratio calculations (ratio = 0). Additionally, the following error was observed:

	Processor 0 error: A license for the Extreme Optimization Numerical Libraries for .NET could not be found. Please see the ReadMe.htm file for instructions to enable the license in your project or visit http://www.extremeoptimization.com to obtain a license. This issue has been resolved by replacing the affected file "CmSieve.exe". The NTMS tool now functions correctly, and ratio calculations are accurate.
864365	**Instrument Controller:** Running a sequence on an Exactive MS for 10 days resulted in the Instrument Controller running out of memory. Measures were implemented to prevent the Instrument Controller from running out of memory.
864816	**Orbitrap Hybrid Series:** When configuring an Orbitrap Hybrid instrument with the Orbitrap Hybrid Series driver version 5.1 and changing the instrument name to a non-default name, pressing the "On" or "Standby" button on the ePanel resulted in an error message "UnknownSymbol:MSDevice.OperatingMode" in the Ready Check. This has been fixed.
866300	**Queries:** Previously, different types of queries had different behavior in terms of the possibility to select all the result rows. The keyboard shortcut Ctrl+A worked only in Instrument Audit Trail Queries, but didn't work in any other query type. Clicking the top-left corner of the results table worked in Injection Queries and in Instrument Audit Trail Queries, but it didn't work in Data Audit Trail Queries and in Admin Audit Trail Queries. In Chromeleon 7.4.1, this behavior is now harmonized, and all types of queries allow selecting all result rows by Ctrl+A, as well as by clicking the top-left corner of the results table.
866932	**Rulesets:** When a ruleset that does not allow Peak Group privileges was created and assigned to a logon role, users with this role were able to modify certain fields in the Peak Group table, despite these fields appearing greyed out and disabled. This has been resolved and fields in the Peak Group table are no longer editable when the ruleset does not allow Peak Group privileges.
867683	**Sequence Queue:** It used to be possible to start the sequence queue while there were unsaved changes to the instrument configuration. This resulted in a warning "Instrument controller is running with unsaved configuration changes." Now trying to start the sequence queue with unsaved changes to the instrument configuration results in an error "Cannot start sequence queue while there are unsaved instrument configuration changes. Save instrument configuration changes." and any changes to the instrument configuration need to be saved before starting the sequence queue.
867689	**Chromeleon Console – Rename items:** In the Chromeleon Console, when viewing contents of folders or associated items of sequences, it was not possible to rename any item through the context if the Name column had been moved and it was no longer the first column. Only the F2 shortcut worked in this case. This issue is now fixed and items in folders or associated items can be renamed regardless of the position of the Name column.
869670	**eWorkflows:** When adding an associated method to an eWorkflow as copy (not as link), no corresponding entry in the data audit trail of the eWorkflow was created. An "associated method" can be an Instrument Method, Processing Method, Report Template, Spectral Library, or View Setting. This has been corrected. Now, a data audit trail entry with operation type "copied" is created; the entry also specifies the source and the target of the copy operation.
870282	**Chromeleon Console – Object overwrite with leading/trailing spaces:** Chromeleon 7.4.1 fixes the issue of failing to identify a name of an object as occupied if leading or trailing spaces are added. Due to this issue, it was previously possible to overwrite an object by providing its name with leading or trailing spaces as a target for an operation like Copy or Save As (provided that the User had the "Delete" privilege for the given object type). This issue is now fixed, and an occupied name will register as such even if leading or trailing spaces are added.
870459	**Chromeleon Console – Raw data statistics:** Chromeleon 7.4.1 fixes an issue with inconsistency of data in the Raw Data Statistics tab of the Sequence, Folder and Data Vaults when custom raw files are present. Their count and size were always included in the total, but they were not included in the pie chart. For this reason, summing the sizes and counts

	around the pie chart didn't always match the total figures stated above it. This issue is now fixed such that custom raw files are now also added to the pie chart.
870824	**Locked Injections:** When reference components were used, locked injections could apply an updated component window if the window was changed in a processing method. This could occur in sequences with multiple processing methods or for components configured to use recently detected retention times, and could change the component assignment of peaks in chromatograms belonging to locked injections. In Chromeleon 7.4.1, locked injections retain the component assignment that was in effect when the injection was locked.
871178	**Chromeleon Console:** Improved tooltip when the Move operation is disallowed for moving associated items from or into a Sequence: *"The move operation cannot be done right now; some selected items have versions or support versioning."* The message now clarifies that the restriction applies even when versioning is disabled.
872465	**Sequences - Network Data Acquisition:** When sequences are downloaded for acquisition on a remote instrument without MS modules, only the Instrument PC (IPC) works directly with the data stored locally on the IPC. All other Clients continue to work with the original sequence data located on the network Data Vault. However, any sequence modifications must first be saved on the IPC before they are propagated back to the Data Vault. Previously, this propagation step could introduce noticeable delays, causing Clients to take significantly longer to save modifications than the IPC itself. This mechanism has now been optimized, reducing Client-side waiting time to a minimum.
873965	**Chromeleon Studio – Reporting 2.0:** Background printing, PDF export, and electronic report generation could fail with an object reference error when the report contained a Mass Spectra plot. Interactive preview, printing, and export were not affected. This issue is now fixed.
875131	**eWorkflows:** Using an eWorkflow to append samples to an existing MS sequence would result in extreme slowness in the eWorkflow user interface. This has now been resolved.
876069	**Migrated (signed) 6.80 sequence:** Error message "Electronic report of the injection is corrupt and cannot be read" when electronic report is printed or exported. Issue was fixed in CM 7.4.
876122	**Network Data Acquisition:** In previous versions of Chromeleon when a Sequence was downloaded to a remote Instrument before acquisition, or when it was uploaded from the remote Instrument after acquisition, the progress bar displayed in the sequence status bar was not persistent. When the user viewed another data item and returned to the Downloading/Uploading sequence, the progress bar appeared empty. Moreover, during the Uploading phase, the progress bar sometimes didn't increment as expected. This issue is now fixed. The progress bar is persistent and during the Downloading or Uploading phase, the progress bar always increments at least as download or upload of data from each injection is completed.
876282	**Chromeleon Architecture - Discovery (Regions):** Some TDS5 machines do not report their BIOS and motherboard serial numbers correctly - Chromeleon Discovery treats them as a single machine which causes issues during assignment of these machines into regions (multiple of them are assigned to the same region even if only one of them was requested to be assigned). If the motherboard serial number AND BIOS version both return 2 blank spaces, computer name is now used instead in Discovery.
876361	**Interactive Charts:** In rare cases, removing a chart while Interactive Charts Properties are displayed caused an unhandled exception. This is now fixed.
877726	**Fixed Calibration:** When using fixed calibration with a sequence having calibration injections assigned to different processing methods with a different set of components, the processing method editor showed the error message 'Sequence contains no elements' when trying to set or update the fixed calibration injections. When this error message was ignored calibration levels of the processing methods might be updated incorrectly or even removed which could finally result in an incorrect or missing calibration for some components. This issue is now fixed.

877793	**Import/Export:** When importing sequences from Xcalibur, Chromeleon defaulted the MS processing compatibility mode to "7.3.1 and earlier". As a result, some imported mass spectrometry information would not be visible until the compatibility mode was manually changed to "7.3.2 and later". Imported Xcalibur sequences now default to "7.3.2 and later" MS Processing Compatibility mode, reducing the need for manual configuration.
877814	**Pump Pressure Limits:** Inuvion, Easion, ICS-600, ICS-900: The pump pressure upper limit can be set to 5000 psi / 35 MPa / 350 bar
878806	**Chromeleon Studio - Reporting 2.0:** Table headers are not repeated after page break when there are multiple tables. New option was added to the Page Layout ribbon tab - Page Setup: Page Breaks: Repeat Table Headers on Manual Page Break that enables repeating of table headers.
879194	**User management:** Changes to a user's email address were not recorded in the Administration Console audit trail. This has been resolved and email address changes are now properly captured.
882819	**Attachment Settings:** Attachment handling for file extension behaves case sensitive. Issue is now fixed.
882982	**Audit trail:** A password change occurring for an admin user while closing another user's locked session was logged to the admin audit trail as the other user changing the admin user's password. This has now been addressed so that it correctly logs it as the admin user performing the password change.
883077	**Chromeleon Studio - Reporting 2.0:** Unable to change formula in report sheet multiple times in a row. Issue is now fixed.
883098	**Chromeleon Studio - Reporting 2.0:** Using Autorepeat Area Setup overwrites the set Print Area and reveals hidden rows where Consolidated table are present. Issue is now fixed.
884119	**Chromeleon Studio - Reporting 2.0:** Use of <Selected Component> in Summary Table is not applied when creating Electronic Report. Issue is now fixed.
884789	**Chromeleon Studio – Processing Method:** Newly added components are incorrectly marked as Internal Standards when using Variable ISTD. Issue is now fixed.
885752	**Report Variables:** Mass spectrum report variable "mspec.saturated" returns "n.a." instead of "True" or "False" when using with MS data created by new ISQ driver 5.x.
886002	**Chromeleon Studio - Instrument Method:** In some instances, updating a newly created sequence from instrument qualification templates results in a Chromeleon error: 'The given key was not present in the dictionary.' This is now prevented.
886494	**IC instruments - Instrument Method:** The TTL/Relay output list was not populated for the Relay-Controlled Autosampler in combination with the ICS-6000 (DC, DP, SP), ICS-5000 (DC, DP, SP), ICS-4000, Integrion, and Aquion IC instrument/modules. This has been fixed. Now, when creating an instrument method, the "Trigger Load Operation using" dropdown is populated with appropriate TTLs and/or Relays.
888027	**Chromeleon Studio - Processing Method:** In previous Chromeleon versions an unhandled exception indicating "An item with the same key has already been added" could be observed when saving processing methods after deleting multiple components that were disabled for calibration. After saving, other calibration conditions could be lost, or starting with 7.3.2 MUd the processing method could be saved in an inconsistent state, leading to the same error when loading the processing method again for calibration. This may result in different unhandled exceptions when viewing the processing method, such as "An item with the same key has already been added." or "Object reference not set to an instance of an object", or, if used in a report or Electronic Report, in incorrectly reporting "n.a." for the first evaluation. This issue has been resolved in Chromeleon 7.4.1. Affected processing methods can now be opened and handled correctly.

888438	**Chromeleon Studio - Reporting 2.0:** Custom fixed row height is not applied if new rows are added (observed in SST table). Issue is now fixed.
888706	**Large Transfers:** Previously, large data transfers were never triggered for copying within the same data vault. However, in situations when such copying was requested from a Client that was remote from that data vault, the data still needed to be transferred to the remote Client and back, whereas triggering a large data transfer would still be much more efficient. This design issue is now resolved. When data is copied within the same data vault, the option of large data transfer is not considered only when the operation is requested from the same machine that hosts the data vault or when data is copied into the same folder. Otherwise, large data transfer can be triggered, if the usual conditions are met.
887726	**Sequence Audit Trail:** The additional info entry in the sequence audit trail did not match the correct injection. This has been resolved.
889185	**Electronic Report:** Double clicking in the electronic report no longer opens the electronic report properties. Issue is now fixed.
892655	**IRC/SST:** Previously, when selecting the “Custom Formula” category in the SST report formula editor, the variables section appeared empty, even though custom formulas were correctly defined and available in the report designer. Users could still reference these formulas manually, but they were not listed for selection. This has been resolved and all available Custom Formulas are now correctly displayed in the Variables section when the “Custom Formula” category is selected.
889656	**Electronic Report:** An electronic report could show different no. of pages when viewed on Chromeleon console and when printed. Issue is now fixed.
892714	**Ardia:** In Chromeleon 7.4 user synchronization with Ardia could fail, resulting in user updates not being reflected correctly. With the Chromeleon 7.4.1 release this has been resolved and Ardia user synchronization now functions as expected.
892792	**Report Variables:** When loading processing methods created with versions prior to 7.2.9 into 7.2.9 or later, multiple response factors defined for components and unidentified peak groups must be mapped to a single response factor in the new named peak group model introduced with 7.2.9. If these response factors differ, this mapping becomes ambiguous. In versions 7.2.9 to 7.4.0, such ambiguity defaulted the peak group response factor to 1.0, which could silently alter *peak.groupamount* results. In 7.4.1, the response factor for these peak groups is now derived from the first non-default (≠ 1.0) component response factor. This restores expected *peak.groupamount* results for cases where a single component carries the intended response factor, while all other components use the default value of 1.0. If multiple differing non-default response factors are present, the data remains inherently ambiguous and *peak.groupamount of versions* prior 7.2.9 cannot be reproduced. In these cases, results depend on component order (creation order) and should be reviewed. **Review Recommended:** This fix corrects an issue that could affect Peak Group amount results when processing methods created before Chromeleon 7.2.9 were opened in versions 7.2.9 through 7.4.0 and the original components within a Peak Group had differing response factors. Customers who used such methods should review potentially affected results.
893033	**Chromeleon Administration Console:** Setting a maintenance window and saving does not work, cleared within a minute. Issue is now fixed.
893412	**Network Data Acquisition:** A Sequence with runnable injections that remains in the "Upload Failed" state in the Queue of a remote Instrument can now be re-run immediately. Previously, attempting to run such a Sequence changed its state to "Failed" in the Queue and "Stopped" in the Status bar. The Sequence could then only be re-run by using the Resume button. This behavior has now been corrected, and runnable Sequences can be re-run directly from the "Upload Failed" state.

894361	**Chromeleon Console – Sequence Editor:** Bad Mini-plot Resolution in the data view of the console after installing upgrade. Issue is now fixed.
896447	**Chromeleon Studio:** Variable peak.sumOfXICPeaks.amount returns inaccurate results when "include in calibration" is enabled. Issue is now fixed. **Review Recommended:** This fix corrects an issue that could affect amounts calculated using the variable peak.sumOfXICPeaks.amount when "Include in Calibration" was enabled. Customers who used this variable with that setting should review potentially affected results.
897019	**Chromeleon Studio - Reporting 2.0:** Electronic report: wrong number of pages when printing single injections. Issue is now fixed.
898501	**Network Data Acquisition:** If an Instrument PC running Chromeleon 7.3.2 or later was restarted while one or more remote Sequences were queued and pending, uploads could later fail during the Uploading phase. Although sequence acquisition completed successfully, the Sequence entered the "Upload Failed" state and required a Manual Upload. This issue has been corrected in Chromeleon 7.4.1, and restarting the Instrument PC while remote Sequences are queued and pending no longer affects their uploads.
898543	**Network Data Acquisition:** Chromeleon 7.4.1 fixes a UI issue where the states of remotely acquired sequences were not updated correctly as they were removed from the instrument queue. The transition from the Synchronizing state to the Uploading state is now reflected automatically in the UI, without requiring a manual refresh.
898572	**Network Data Acquisition - Privileges, Online Help:** Online Help has been improved to include more detailed information about privileges required to perform Recovery Upload and Recovery Move (previously known as Manual Upload and Manual Move), and as a prerequisite, the privileges required to remove sequences from the queue.
898573	**Chromeleon Console - Send To:** Chromeleon 7.4.1 fixes an issue where the *Send To* operation was allowed for sequences that were queued or running, as well as for folders containing such sequences. This operation is now prohibited, consistently with copying or moving such sequences or folders containing them.
899724	**Audit Trail:** Audit Trail in Organizational Units (OU) not showing any result and everything is greyed out. Issue is now fixed.
900142	**Network Data Acquisition:** Chromeleon 7.4.1 fixes a UI issue where the action button in the Sequence status bar was incorrectly enabled when the Sequence was in the "Connecting" or "Disconnected" state. While connecting, the button could display "Add to Queue" even if the Sequence had already been queued. In other cases, selecting the button resulted in an error indicating that the instrument was not connected. The action button is now correctly disabled whenever the Sequence is in the "Connecting" or "Disconnected" state.
901462	**Chromeleon Studio – Reporting:** Reporting Correlation Coefficient Variable Assigned to "R Square" Heading in Report 2.0. Both Reporting 1.0 and 2.0 templates contained inconsistencies in the calculation of the r-square value on calibration sheets. In Reporting 1.0, the undocumented formula peak.rQuadrat/100 was used, rQuadrat originates from legacy functionality and is equivalent to the coefficient of determination (coeffOfDet). In Reporting 2.0, the r-square field incorrectly referenced peak.correlation_coefficient/100 which may yield different results. These issues were fixed by standardizing both report template versions to use the correct and documented formula: peak.coeffOfDet/100. **Review Recommended:** This fix corrects an issue that could affect r-square values reported using Reporting 2.0 calibration templates in previous releases. Customers who used the R-Square field in these templates should review potentially affected reports.
901717	**Privileges:** Injections containing only audit trail data could be copied between sequences without the required Copy Injection privilege. This has been resolved.

901987	**Instrument Control - Privileges:** Chromeleon 7.4 introduced unnecessary privilege checks in the Instrument Control category. Operations that had previously required the *Control Queue* privilege but not the *Control Instrument* privilege started to require both, and when performed while the queue was running, also the *Control Instrument While Queue Is Running* privilege. Chromeleon 7.4.1 fully resolves this issue, and these additional privileges are no longer required.
903245	**Chromatogram plot:** Changing the gradient dwell time within the Chromatogram properties does not shift the gradient curve by the specified time.
903682	**Sequence Editor:** UI freezes for couple of minutes after user selects multiple injections from bigger sequences and invokes the context menu. Issue is now fixed.
904266	**Chromeleon Studio - Reporting 1.0 & 2.0:** Unexpected change in report output behaviour (Consolidated Tables – "First Injection" setting). Issue is now fixed.
904321	**Performance:** Submitting sequences and viewing electronic reports is slow since upgrade. Issue is now fixed.
905835	**Installation – Response File:** The installer now correctly handles response files that exclude the Chromeleon Station Audit Logger component. Previously, excluding this optional component could cause the post-installation phase to fail, preventing installation from completing. The installer now detects when the component is not installed and skips the associated post-installation tasks.
905924	**Chromeleon SDK:** Improved performance of Chromeleon SDK add-ins using injection queries in Multi-User Data Vault environments.
906409	**Chromeleon Studio:** With Chromeleon 7.4, opening the Peptide Table in the Chromeleon studio would sometimes fail with the error "Value cannot be null. Parameter name: component", preventing the table from displaying. This has been resolved.
906566	**Vanquish CAD H/F:** For instruments that include a Vanquish Charged Aerosol Detector H/F (VH-D20-A or VF-D20-A) and another detector, the CAD can be disconnected or even switched off (without removing the detector from Chromeleon instrument configuration). Instrument methods where the usage of the detector has been deselected can nevertheless be run. SmartStartup functionality, however, is not supported in this case.
906595	**Network Data Acquisition:** Chromeleon 7.4.1 improves the robustness of sequence downloads to remote instruments. Previously, any network interruption caused the download to fail and required a complete restart. Starting with Chromeleon 7.4.1, downloads tolerate short-term network outages and automatically resume once the connection is restored.
906699	**Sequences – Injection Query – Privileges:** Users without the *Copy Injection* privilege were previously able to copy injections with raw data from Injection Query results and paste them into a Sequence. This issue has been fixed. The Copy operation in Injection Query results is now restricted to users with the *Copy Injection* privilege.
906785	**Chromeleon Studio - Instrument Method:** In some instances, updating a newly created sequence from instrument qualification templates results in a Chromeleon error: 'The given key was not present in the dictionary.' This is now prevented.
908112	**Print preview operation in the Studio Injection List category:**- After changing some values of injections in a sequence (for example, injection name, sample weight, processing method) and saving the modifications it could happen that a subsequent print preview of the injection list showed values for the modified injections which were apparently not saved. Now with the new Chromeleon release, the property values for all injections of the sequence will be reloaded from the database prior to any print preview and subsequent print operation. The print preview will always show the actually stored values of the injections.
910548	**Report Variables:** Mass accuracy calculation failed for SIM and SRM scans in some cases. As a result, report variables such as 'compScoring.massAccuracy(1)' could unexpectedly return 'n.a.'. This has been corrected in the new Chromeleon release, and mass accuracy is now

	calculated correctly for scans with very narrow mass ranges when an appropriate mass tolerance is configured in the processing method.
910955 **921462**	**Chromeleon Studio - Chromatogram:** In some instances, working with chromatograms could result in the error 'The given key was not present in the dictionary.' This could occur, for example, when viewing or zooming chromatograms during acquisition or when viewing and manipulating chromatograms from previously acquired data. This issue has been resolved.
911825	**MS Driver - ISQ EC/EM:** The Quadrupole MS Driver for GC-IC-LC Series 5.2.2 for Chromeleon requested the wrong license (High Resolution MS Acquisition) in Chromeleon 7.4. This has been fixed with the Quadrupole MS Driver for GC-IC-LC Series 5.2.3 for Chromeleon. The Quadrupole MS Driver for GC-IC-LC Series 5.2.3 for Chromeleon is now requesting a Unit Resolution MS Acquisition license.
915591	**Chromeleon Studio:** When viewing a sequence with 1000 components in the studio and closing the studio there the acquired memory was not released properly. After just opening and closing the studio 3 times without doing anything else, the main memory usage increased by 250 MB. This leak only had a significant effect on sequences with many components. The implementation has been improved, so that the memory is released correctly.
920030	**Network Data Acquisition – Privileges:** Chromeleon 7.4.1 resolves an inconsistency in the privileges required for Recovery Upload and Recovery Move (previously known as Manual Upload and Manual Move). Before, only Recovery Move temporarily set the sequence to read-only, whereas Recovery Upload did not. This behavior has been harmonized, and both operations now temporarily set the sequence to read-only, preventing accidental changes from other clients. Thus, both operations require the *Make Sequence Read-Only* and *Acquire Sequences Without Approval* privileges. This requirement is now also documented in the Online Help.
920808	**Data Audit Trails:** Data Audit Trail viewer performance was significantly improved starting with version 7.3.2 as part of the Data Audit Trail Query feature. The previous 7.2.10 implementation used a high-complexity algorithm for duplicate removal and entry summarization, which could require overnight execution for large audit trails. The new implementation scales much better for large datasets, reducing runtime from many hours to minutes in tested scenarios. This improvement is considered fixed in 7.3.2 and is not planned for backport to 7.2.10.
921653	**Chromeleon Studio - Reporting 2.0:** Auto-repeating with custom conditions does not work. Issue is now fixed.
924328	**Business Continuity Repository:** In Chromeleon 7.4, the *Studio* and *Restore* options were incorrectly enabled in Data Audit Trails for Continuity nodes in the Data Tree, although these actions are not supported and resulted in error messages. This issue is resolved in Chromeleon 7.4.1, where the options are now disabled.
924719	**Chromeleon Studio – Processing Method:** For retention time interpretations != AbsoluteTime the clone operation for the retention time object did not work correctly. The reference component was not set after cloning. This could lead to null reference exceptions. This is now fixed.
924776	**MS Performance:** Chromeleon 7.4.1 fixes an issue where discarding changes of a manual XIC integration makes the application become unresponsive for an extended period before recovering. The effect can be observed particularly in case of manually integrated Quan XICs in combination with very expensive processing features like Previous Retention for reference components and Composite Scoring with Mass Accuracy check activated. This issue is now fixed and discarding changes in such scenarios shows smooth performance.
924782	**Chromeleon Studio:** In Chromeleon versions prior to 7.4.1, an unhandled exception "Object reference not set to an instance of an object" could occur when working with a sequence containing XICs in Studio while a stand-alone report template assigned to the same sequence was open. The error could be triggered by changes to processing settings or other modifications affecting component assignments.

	This issue has been resolved in Chromeleon 7.4.1. Stand-alone report templates can now be used in parallel with sequences without triggering this error.
924783	**Network Data Acquisition:** When downloading multiple sequences to one instrument, or to multiple instruments on the same instrument PC (IPC), it could happen that one or more of the sequences failed to download. This occurred mainly in tests but could also happen with real data and instruments. We have identified concurrent database operations as the root cause, leading to an error state known as "deadlock". The problem was fixed by improving the parallelism of the affected database operation, by enforcing the use of a particular database index.
924788	**Chromeleon Console – Worklist Import:** XML worklist import could unintentionally overwrite the existing NTMS peak detection algorithm and peptide display mode sequence properties with default values when they were not specified in the worklist. This issue is now fixed.
924792	**Chromeleon Console:** In certain scenarios, copying a sequence could take a very long time, or the copy operation could abort with a "time out" related error message. More specifically, this could happen with a sequence that contains a large number of deleted injections in one of the previous sequence versions, especially when these deleted injections contain raw data (like signals and injection audit trails). The copy operation has been optimized so that such a sequence could be copied in a reasonable time, without running into a "time out".
924805	**Chromeleon Console:** A problem has been identified that affected especially sequences with a long version history: Several operations, especially copy operations, took a very long time, aborted with a "time out" error, or required a huge amount of memory (RAM). As root cause we have identified a special handling of some injection properties that are related to data acquisition, like inject time and injection status. This caused unnecessary load operations. This has been improved so that copy operations are completed in timely manner, by avoiding unnecessary load operations.
924845	**Electronic Reports:** In operations related to electronic reports, especially when submitting a sequence, it could happen that the report template used by the sequence became permanently locked, preventing the same or other users from performing a similar operation (like submitting). This happened when the used report template was located on a different data vault than the sequence. To prevent concurrent changes, both the sequence and the report template were locked. However, the "locking component" in Chromeleon failed to handle lock requests for multiple items (for example, a sequence and report template) correctly, when the items were located on different data vaults. It could happen that one of the items, for example, the report template, was not released when the operation was completed. This has been fixed: The "locking component" now handles lock requests correctly also when they span items on multiple data vaults.
924853	**Injection List:** In Chromeleon versions prior to 7.4.1, numeric values entered in the Console injection list were rounded during input using a “round-to-even” method. This could lead to unexpected results, for example 1.23465 being displayed as 1.2346 instead of 1.2347 due to the applied rounding method. This issue has been resolved in Chromeleon 7.4.1. Rounding is no longer applied during input, and these values are now only rounded for display using the “away from zero” method.
924860	**Injection List:** In Chromeleon versions prior to 7.4.1, numeric values entered in the Console injection list, or imported via worklists, were truncated to the configured precision, which caused premature loss of precision; for example, a value such as 1.234567 entered in a field with precision of 4 was stored as 1.234600 and used in that truncated form for subsequent calculations. This issue has been resolved in Chromeleon 7.4.1, where numeric values entered in the injection list or imported through worklists are now accepted and stored with full precision as entered. This change applies only to newly entered values and newly imported sequences, so values already stored in existing sequences are not affected. For worklists, this may result in different behavior compared with previous versions: when worklists containing numeric values with higher precision are imported into Chromeleon

	7.4.1 or later, the entered values are retained with full precision, which means sequences generated from those worklists may contain different stored values, and subsequent calculations based on those values may differ from sequences created with earlier versions. **Review Recommended:** This change affects how newly entered or imported numeric injection values are stored in Chromeleon 7.4.1 and later. Customers should consider the increased stored precision when comparing newly created sequences or calculated results with those produced in earlier versions.
929595	**Vanquish MWD-C:** Chromeleon 7.4 contained an invalid firmware version 2.20 file for Vanquish MWD-C. A new valid firmware version 2.20 file for the Vanquish MWD-C is now included in Chromeleon.
930000	**Vanquish Binary Pump F/C:** When trying to connect to a Vanquish Binary Pump F/C an error message “Cannot prepare flow unit for stroke synchronization. Firmware version 2.50 or newer is required” was shown. The missing firmware version 2.50, which supports pump stroke synchronization, is now included in Chromeleon.
931655	**Inuvion:** The property “Prime Duration Max Limit” for the pump was set to an incorrect value of 180 seconds and it is now set to correct value of 300 seconds. This has been fixed in Chromeleon 7.4.
936151	**Privileges:** Improved new injection insertion behavior to ensure user permissions are applied consistently. Users with only the "Insert New Injection Between Finished or Interrupted Injections" privilege can no longer insert a new injection before an initial Idle injection. Adding an injection at the start of a sequence now correctly requires the "Add New Injection" privilege.
937577	**Chromeleon Studio - Reporting 2.0:** IPD Component Results Table, after editing "Object reference not set to an instance of an object." error messages observed. Issue is now fixed.
937945	**Import:** When a Certis data file was imported as the MS Raw Data source, the MS Component Table did not populate and instead displayed the message, "No data found. Select and import data source." This issue has been resolved, and the MS Component Table now correctly displays the identified components from the selected Certis MS raw data file**.**
938493	**Interactive Chromatogram plot:** Manual chromatogram integration and peak assignment in the Studio might cause an unhandled exception, this issue is now fixed.
938997	**Chromeleon Console:** Sequence stopped immediately after the sequence started without pop-up window. Issue is now fixed.
941608	**Chromeleon Studio - Reporting 2.0:** Report template charts are converted without data and warnings during conversion of reporting 1.0 to reporting 2.0. Issue is now fixed.
941646	**Chromeleon Studio: Reporting 2.0:** Undo/Redo and Save not working after applying "Replace" functionality including Audit Trail. Issue is now fixed.
941647	**Chromeleon Studio - Reporting 2.0:** Exporting through CM console with report template 2.0 does not show same results on results page as in Reporting 1.0. Issue is now fixed.
941648	**Chromeleon Studio - Reporting 2.0:** Converted spreadsheets formulas are not editable in Reporting 2.0. Issue is now fixed.
941649	**Sequence Editor/Studio:** Different behavior during saves of not allowed values for injections. Issue is now fixed.
941650	**Chromeleon User Interface:** Warning dialog is sometimes out of focus so user cannot continue and Chromeleon must be killed through task manager. Issue is now fixed.
941651	**Sequence Editor:** Object reference exception when users tried to fill down values of newly added injections. Issue is now fixed.
941652	**Chromeleon Studio - Reporting 2.0:** IPD Table - Inserting a new 'Entire Column' below the IPD table triggers system.nullReference Exception. Issue is now fixed.

941653	**Chromeleon Studio - Reporting 2.0:** Audit trail: Performance problem and freezing of CM Studio when user tries to show changes for Default MS Report template 2.0. Issue is now fixed.
941654	**Chromeleon Studio - Reporting 2.0:** Converting Report templates from 1.0 to 2.0 with Autorepeat area defined results in pages observed with 0 and 2 across all pages. Issue is now fixed.
941655	**Global Calibration Settings:** Fixed mode: Custom variable ISTD column not taken into consideration. Issue is now fixed.
941656	**Chromeleon Studio - Reporting 2.0:** Undo/Redo not working for export settings. Issue is now fixed.
941657	**Sequence Editor:** Pasting injections into idle injections and finished injection is not behaving correctly. Issue is now fixed.
941658	**Chromeleon Studio - Reporting 2.0:** Audit trail: No information in audit trail in case that user adds some data next to table. Issue is now fixed.
941659	**Custom Variables Wizards:** CM7:IntStd_Level custom variable from imported sequence is not available. Issue is now fixed.
943375	**Services:** The Updater service would fail to start when the configured Central Updater host name in the global policy contained only spaces. This has been resolved.
943377	**Non-Targeted MS Processing (NTMS):** In some instances, switching between injections after scoring all injections could cause the plot to remain in a loading state and prevent the data from being displayed. This has been resolved.
944139	**Chromeleon Studio - Report Designer:** Report Designer Pro License bit not evaluated correctly in Studio. From now on, users without this license are not granted permission to add General Chart via the context menu.

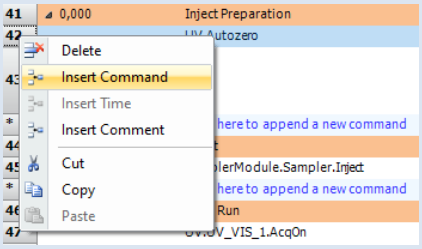
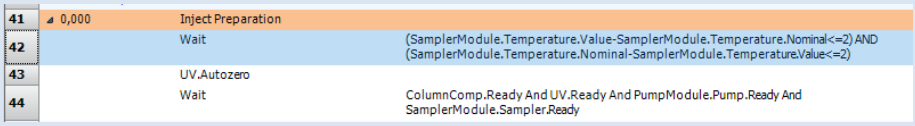
5 Limitations and known issues

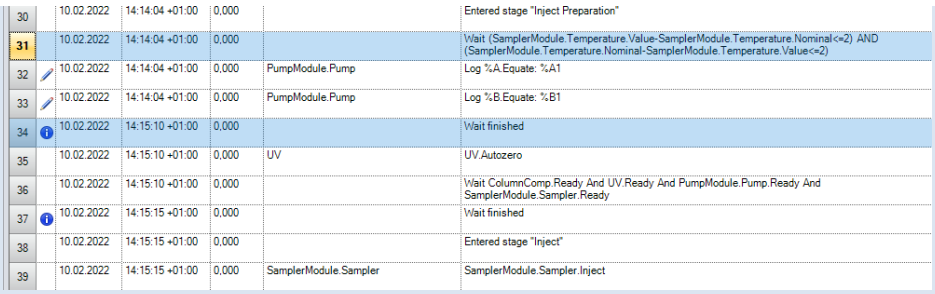
The following section lists known limitations and issues applicable to Chromeleon 7.4.1, including new and updated items identified for this release and unresolved items carried forward from previous releases.

5.1 Limitations with Thermo Scientific instruments

ID	Description
148280	**Vanquish DAD HL:** With a Vanquish DAD HL (VH-D10-A) in very rare cases, the injection is running continuously and the UV signal is not recorded.
198957	**ISQ EC/EM or GC ISQ/TSQ**: When using either the ISQ EC/EM or the GC ISQ/TSQ series with driver versions prior to 5.2.3 there exists the possibility of sequence interruptions where the injection audit trail records the message "Error initializing the raw file. CouldNotCreateRawFile". This issue has been fixed with the latest driver release, version 5.2.3.
162479	**Vanquish Driver:** For the Vanquish DAD FG/CG and MWD CG, the wellness properties for the UV/VIS lamp operation time limit and warning were transmitted enlarged by a factor of 4 to the instrument. Warnings and limits are now transmitted correctly to the instrument. If you have previously set limits and/or warnings for the Vanquish DAD or MWD lamp operation lifetimes, these will now be read out from the firmware at 4 times the intended value. If you wish to remain with the initial settings, you will need to adapt the values set for the UV/VIS lamp operation time limits and/or warnings in Chromeleon by reducing them to their initial value (25% of new value). Example: With Chromeleon 7.3 (or earlier), 7.2 SR5 MUk (or earlier) or 7.2.10 MUa, a setting of UV/VIS lamp operation time limit of 2,500 hours would be transmitted to the firmware as 10,000 hours. After an upgrade to Chromeleon 7.2.10 MUb, the value of 10,000 hours is read out from the firmware and set as the UV/VIS lamp operation time limit in Chromeleon. If the intended limit is 2,500 hours, you will need to adjust the limit in Chromeleon to 2,500 hours.
163499	**UltiMate 3000:** In very rare cases the injection status of an injection stays on “Running” and subsequent injections are not started. Proceeding to the next injection requires a restart of the Instrument Controller. Upon restart of the Instrument Controller the status of the injection is changed from “Running” to “Interrupted” (although “Finished” would be appropriate).
167481	**UltiMate 3000:** Trying to acquire the pump pressure signal for 24 hrs. with a high data rate (100 Hz) results in an instrument crash. This was seen with an UltiMate 3000 pump HPG-3400RS. This is due to the fact that the signal acquired at 100 Hz for 24 hrs. results in 8.64 million points. The console memorizes these points and increases the size of the respective PointList, which leads to System.OutOfMemoryExceptions in the console. The only way to fix this is to stop the instrument controller and close down Chromeleon.
171456	**UltiMate 3000:** When migrating from Chromeleon 6.8 to Chromeleon 7.4 (under Windows 10), UltiMate 3000 system(s) connected via USB may result in the PC to which these instruments are connected not starting.
171977	**Shared Devices:** When configuring an UltiMate 3000 DGP or a Vanquish Dual Pump, a Vanquish Dual Autosampler, or Vanquish Column Compartment that is shared between two instruments, make sure to use non-identical device names for the instrument devices (e.g., PumpLeft and PumpRight).
172030	**UltiMate 3000 MWD-3000 and DAD-3000:** In the Instrument Method Editor for these devices, the script page offers one additional option for the data collection rate (20 Hz) that is not present in the Instrument Method Wizard. This additional option is a valid value for this parameter. Although it is possible to manually type in a value for the data collection rate

	that is not in the list, these values will be rejected by the Ready Check when a sequence is submitted.
172735	**TriPlus 500 HS:** When acquiring a sequence with overlapping sample preparation, the system may create an audit trail log event regarding a vial/injection that is not the current injection. When this occurs, the event is logged to the current injection rather than the preparing injection to which it relates.
172740	**MSQ Plus:** There are known issues where saving or modifying MSQ Plus instrument methods or Tune files fail. This change in operation has been linked to applying monthly Microsoft Quality updates to Windows 10 and Windows 7 operating systems. Removing the Windows KB Updates will resolve the issues in most cases. However, in certain situations, it may be necessary to restore the system to an earlier point before the Windows Updates were applied. It is strongly recommended that automatic updates for Windows be disabled on systems running MSQ Plus instruments. Any Windows Updates that are planned for application on systems running these instruments should be tested at the installation site before they are installed on a system in active use.
172744	**MS Tuning:** When one or more MS Tune Reports are deleted from their default folder (/Instrument Data/(Instrument Name)/MS Tune Reports) the list of available Tune Reports on the MS ePanel will not be automatically refreshed to reflect the change. This can occur if the reports are deleted manually as well as if they are deleted automatically (when automatic archiving is enabled)
172736	**Vanquish Autosampler / Charger:** In rare circumstances if a transport error occurs with the Vanquish Autosampler (VH-A40-A or VF-A40-A) with a charger (VH-A90-A), it is not possible to bring the system into an operational state using the commands “Reset“ or “Cleanup”. An instrument controller restart is necessary.
172738	**Vanquish DAD HL:** Using the command "UV.Shutter Closed" in an instrument method after the Acquisition Off commands, the Method Check does not trigger a warning or error. Using this instrument method in a sequence does not elicit a warning or error in the Queue Ready Check. However, starting the queue fails and Chromeleon reports in the instrument audit trail: "Can't change the 'Shutter' property during data acquisition, or during autozero, calibration and validation procedures."
172739	**Vanquish Autosampler:** The option “External Rack Transfer” is not compatible with Chromeleon User-Defined Programs (UDP’s).
172742	**IQ/OQ/PQ:** For the OQ/PQ for the UltiMate 3000 NCS-3500RS in the warmup and oven test sequence Solvent B shows a wrong value on the specification sheet. Instead of "water + 0.x% acetone" the sheet shows "Caffeine..." as the value for solvent B for gradient (correct reference is line 375 instead of 372).
172746	**Vanquish Charger:** The Vanquish Charger is only supported with Vanquish Autosamplers with temperature control.
172751	**Vanquish Autosampler:** The option “External Rack Transfer” is not compatible with Chromeleon User-Defined Programs (UDP’s).
179261	**Instrument OQ/PQ:** The HPLC Instrument OQ/PQ templates for UltiMate 3000 LPG SD pump instrument methods with an incorrect maximum pressure limit (e.g., 621 bar instead of 620 bar for the UltiMate 3000 LPG-3400SD). The Ready Check does not capture this incorrect pressure limit. While the sequence can be started, the incorrect pressure limit causes a sequence interruption. This has been documented in the "Thermo Scientific Chromeleon Operational Qualification/Performance Qualification for HPLC Instruments Operating Instructions", which needs to be purchased separately from Chromeleon.
195521	**GCMS Single Quadrupole instruments (ISQ and ISQ 7000 families) and GCMS Triple Quadrupole instruments (TSQ 8000/9000 families):** GCMS Single Quadrupole instruments (ISQ and ISQ 7000 families) and GCMS Triple Quadrupole instruments (TSQ 8000/9000 families) provide several options (e.g. timed SRM mode) for which the permission to use the option is stored in the flash RAM of the MS hardware. If you purchase the option at the time of the MS instrument purchase, the flash RAM has the option included. If you purchase the

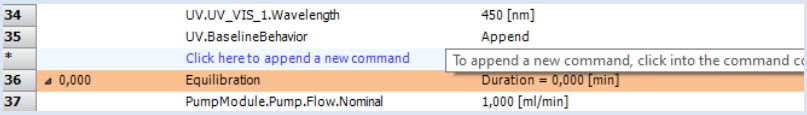
	option after the MS instrument purchase, Thermo Fisher ships you a small ini file, which you then upload to the MS flash RAM. If a Chromeleon instrument method requires such a GCMS instrument option, but the permission for the GCMS instrument option is not available in the flash RAM of the MS hardware, the Sequence Ready Check and Instrument Audit Trail show an error message. (For example: „Instrument method cannot be run: Timed mode is not allowed under the current license. To enable timed mode acquisitions, please upgrade your software to include time mode.“) This error message is somewhat misleading, as it is the flash RAM of the MS hardware that needs to be updated with the relevant permission, not Chromeleon itself.
205590	**Vanquish Dual Pump (DGP):** If a Vanquish Dual pump is configured with the option “shared bottle” selected, it should not be possible to set different eluent monitoring properties (%A/%B/%C_WarningLimit and %A/%B/%C_Level.LowerLimit) for the two pump units. However, it is possible to set the WarningLimit and Level.LowerLimit to different values for both pumps. This results in different RemainTime values for both pumps, which is not possible with a shared bottle. In addition, %A/%B/%C_Level.Value is divided by a factor of 2. That is, the system switches the pump off at half the intended Level.Value. This limitation is not applicable in cases where a Vanquish Solvent Monitor module is part of the instrument. Workaround: Set the same eluent monitoring properties (%A/%B/%C_WarningLimit and %A/%B/%C_Level.LowerLimit) for both pump units.
207049 **819467**	**Vanquish sampler:** For the Vanquish sampler the User Interface does not provide an option to specify that the system should wait with the injection until the temperature setpoint has been reached. The Chromeleon Script Editor can be used to define an appropriate 'Wait' command to make the system wait with the injection until the expected temperature has been reached, for example, Wait (SamplerModule.Temperature.Value-SamplerModule.Temperature.Nominal<=x) AND (SamplerModule.Temperature.Nominal-SamplerModule.Temperature.Value<=x) Workaround: <u>To make the instrument wait for the sampler temperature to be within 2 °C of the setpoint:</u> 1. Modify the instrument method using the Script Editor. 2. Click on the first line in 'Inject Preparation' stage and select 'Insert Command'.  3. In 'Command' column, enter the command Wait, in 'Value' column, enter the following formula: (SamplerModule.Temperature.Value-SamplerModule.Temperature.Nominal<=2) AND (SamplerModule.Temperature.Nominal-SamplerModule.Temperature.Value<=2)  Notes: By changing the '2' in the formula, other ready conditions can be implemented. The formula might be different in case non-default device names have been configured in Instrument Configuration Manager. 4. Now the method execution pauses until the temperature is within the given limits.



30		10.02.2022	14:14:04 +01:00	0,000	Entered stage "Inject Preparation"
31		10.02.2022	14:14:04 +01:00	0,000	Wait (SamplerModule.Temperature.Value-SamplerModule.Temperature.Nominal<=2) AND (SamplerModule.Temperature.Nominal-SamplerModule.Temperature.Value<=2)
32		10.02.2022	14:14:04 +01:00	0,000 PumpModule.Pump	Log %A.Equate: %A1
33		10.02.2022	14:14:04 +01:00	0,000 PumpModule.Pump	Log %B.Equate: %B1
34		10.02.2022	14:15:10 +01:00	0,000	Wait finished
35		10.02.2022	14:15:10 +01:00	0,000 UV	UV.Autozero
36		10.02.2022	14:15:10 +01:00	0,000	Wait ColumnComp.Ready And UV.Ready And PumpModule.Pump.Ready And SamplerModule.Sampler.Ready
37		10.02.2022	14:15:15 +01:00	0,000	Wait finished
38		10.02.2022	14:15:15 +01:00	0,000	Entered stage "Inject"
39		10.02.2022	14:15:15 +01:00	0,000 SamplerModule.Sampler	SamplerModule.Sampler.Inject

<u>To acquire the sampler temperature as a virtual channel:</u>

1. Modify the instrument method using the Script Editor. In 'Instrument Setup' stage, click on 'Click here to append a new command':



34		UV.UV_VIS_1.Wavelength	450 [nm]
35		UV.BaselineBehavior	Append
*		Click here to append a new command	To append a new command, click into the command c
36	0,000	Equilibration	Duration = 0,000 [min]
37		PumpModule.Pump.Flow.Nominal	1,000 [ml/min]

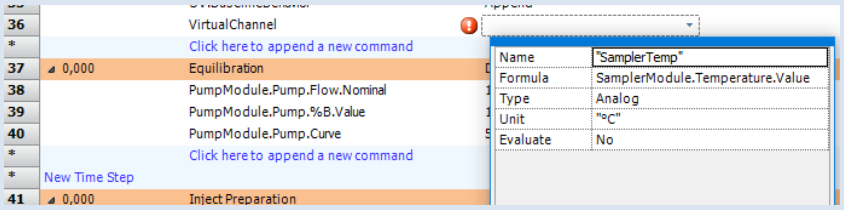
2. In column 'Command', enter the command VirtualChannel, then open the drop-down dialog in column 'Value'.
   Enter the following values:
   Name: "SamplerTemp"

   Formula: SamplerModule.Temperature.Value (might be different in case non-default device names have been configured in Instrument Configuration Manager)

   Type: Analog

   Unit: "°C"

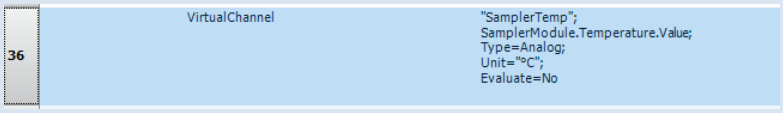
   Evaluate: No



36		VirtualChannel	
*		Click here to append a new command	
37	0,000	Equilibration	
38		PumpModule.Pump.Flow.Nominal	
39		PumpModule.Pump.%B.Value	
40		PumpModule.Pump.Curve	
*		Click here to append a new command	
*	New Time Step		
41	0,000	Inject Preparation	

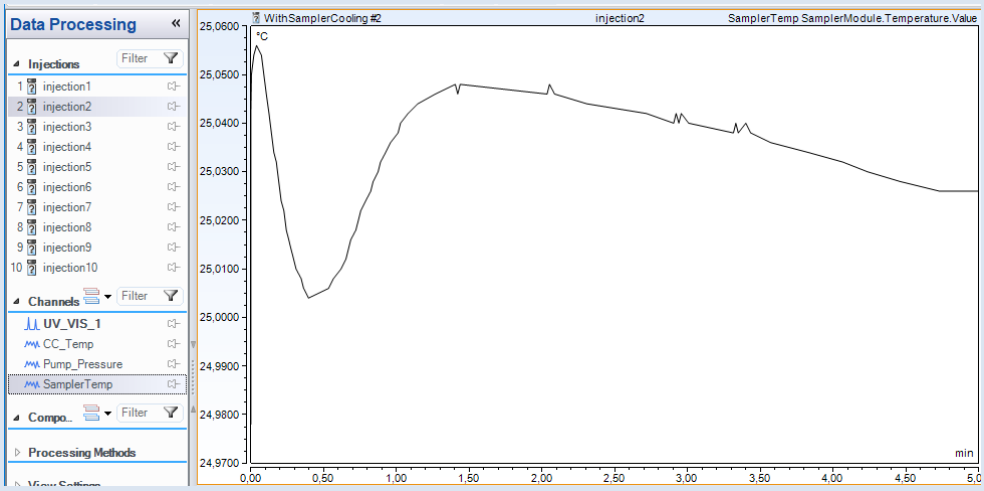
Name	"SamplerTemp"
Formula	SamplerModule.Temperature.Value
Type	Analog
Unit	"°C"
Evaluate	No

3. Close the dialog. The following line should have been added.



36	VirtualChannel	"SamplerTemp"; SamplerModule.Temperature.Value; Type=Analog; Unit="°C"; Evaluate=No

4. When running this method, the channel is available in the related injection(s).



238872	**Vanquish ISQ Family:** If the device name of Vanquish ISQ Family is using Unicode characters (for example, if it is localized in Japanese) the Ready Check fails.

238873	**UltiMate 3000 PCM-3000:** For UltiMate Detectors DAD, MWD and VWD with the PCM-3000, the automatic gain adjustment of the PCM-3000 frequently leads to wrong conductivity channel values.
245918	**MS Tune:** The embedded tune window in Chromeleon can be closed while running a calibration by exiting Chromeleon. The Chromeleon window closes, and the calibration continues. An invalid entry will be added to audit trail, for example, 'Diagnostic run finished with result passed'. Restarting Chromeleon immediately will open Tune to allow the user to start a new calibration while the previous calibration could still be running. This in turn means that the results of both calibrations can be unreliable. This is different from the behavior of the stand-alone Tune application. When closing the stand-alone Tune application, a warning "Calibration is in progress. Do you want to close Tune application?" is shown allowing the user to confirm or cancel closing the stand-alone Tune application.
254951	**MS Method Editor:** When trying to open the MS method part of multiple instrument methods Chromeleon Studio crashes with "System out of memory".
282028	**UltiMate VWD-3400(RS):** In the data collection section for the UV portion of a method, the peak width value will change to 0.02 min if the method is saved and reopened. The Data Collection Rate and Time Constant will change according to the Peak Width entered in the Instrument Method Editor and stay at the desired value after the method is saved and reopened.
296042	**Vanquish DAD CG/FG:** In very rare cases, when two Vanquish instruments are configured with a Vanquish Diode Array Detector CG/FG (VC-D11-A and/or VF-D11-A) each, switching off one of the two DAD detectors may lead to a negative interference with the second DAD. The second DAD may stop sending data, and the chromatogram stops displaying detector data. As a consequence, the sequence may be aborted after a time delay.
320796	**SmartX:** If an MS is part of the system, SmartX is not supported.
344351	**Thermo ISQ and TSQ GCMS:** Instrument methods developed for the Thermo ISQ or TSQ GCMS using a driver version older than 5.0 will not be readable or usable when version 5.0 or higher of the driver is installed. The workaround is to either downgrade the driver to the older version or re-create them using the version 5 driver.
347230	**Thermo Exploris Series ePanel:** On the Thermo Exploris Series ePanel the "MS Parameters" panel is missing.
452557	**Vanquish Solvent Monitor:** After a solvent channel of the Vanquish Solvent Monitor has been disabled on the 'More Options' subpanel, it can only be reactivated via the command (F8) window.
454004	**Firmware update:** Chromeleon does not prevent a firmware update while an acquisition is in progress.
639922	**ISQ-EM Quadrupole MS Driver for GC-IC-LC driver version 5.1:** The filters defined in the instrument method are not selectable in the Real Time Plot. Only the TIC is available.
789292	**Instrument Drivers - Vanquish VWD:** For the Vanquish VWD (VC-D40-A) in rare cases data for the UV-VIS channel are not recorded completely. Trying to open the affected data in the Studio results in an error message "Can't read channel UV_VIS_1 from injection #injection number - Injection name." or "The interpolation requires at least 4 points. But the number of data points is only 1." While the root cause of this behavior is likely a firmware issue, Chromeleon now alerts users to incompletely recorded data by issuing an error in the injection audit trail for missing analytical data and a warning in the injection audit trail for missing diagnostic data.
823168	**MS Systems:** For an MS system, if in the "Chromeleon Services manager" the option "Start service on system start" is checked, the system does not connect to the MS with an error message "The device could not be connected (The configuration doesn't belong to the connected mass spectrometer. Please reconfigure the mass spectrometer module)." Selecting the option "Start service on system start" in the "Chromeleon Services manager"

	results in a timing issue, as the Chromeleon services are started before the MS driver and Chromeleon cannot connect to the MS driver. Workaround: For an MS system, do not select the option "Start service on system start" in the "Chromeleon Services manager".
823891	**Instrument Drivers - UltiMate 3000 DAD:** For the UltiMate 3000 DAD-3000(RS) in rare cases data for the UV-VIS channel are not recorded completely. Trying to open the affected data in the Studio results in an error message “Can't read channel UV_VIS_1 from injection #injection number - Injection name." or "The interpolation requires at least 4 points. But the number of data points is only 1." While the root cause of this behavior is likely a firmware issue, Chromeleon now alerts users to incompletely recorded data by issuing an error in the injection audit trail for missing analytical data and a warning in the injection audit trail for missing diagnostic data.
850335	**Vanquish Drivers:** A Vanquish instrument with two Column Compartments cannot be configured. The underlying cause for this issue may be insufficient USB bandwidth to fulfill the bandwidth reservations made by the instrument modules. When a second Column Compartment driver instance is configured with the USB address that is already used by the first Column Compartment, an error message indicates that the selected USB address is already in use.
854050	**Vanquish Variable Wavelength Detector:** If the shutter is opened or closed manually (e.g., via ePanel), no firmware download is possible afterwards. The audit trail message is “Error: Cannot start firmware installation. The module is still busy.”
854054	**TSQ MS Tuning/Calibration:** If the instrument is disconnected while a tune/calibration operation is in progress, the tune will not automatically fail or abort. It may take an hour or more before the instrument audit trail reports that the MS is disconnected. If the instrument is reconnected, the calibration will automatically resume.
854059	**Vanquish Core:** Vanquish Core modules require a minimum firmware version 2.01 or 2.02 for pumps, respectively. Please also use firmware version 2.01 (FW version 2.02 for pumps) for any new modules of the Vanquish Flex and Vanquish Horizon series. Vanquish Core modules can be combined with Vanquish Flex and/or Vanquish Horizon modules in one instrument as long as firmware version 2.01 (FW version 2.02 for pumps) or higher is used for all modules. For existing Vanquish Flex and Horizon modules, firmware version 2.01 (FW version 2.02 for pumps) is compatible with the minimum Chromeleon version required to control the instrument (or a higher version of Chromeleon) as stated in the List of Supported Instruments.
870251	**Vanquish Autosampler:** Wash solvent monitoring is currently not supported for the Vanquish Dual Split Samplers (VH-A40-A, VF-A40-A).
902005	**Thermo MS drivers – Stellar MS:** The "Import Data Column from Mass List CSV" functionality is exposed in Method Editor of Stellar ICSW v1.1 (and lower) but is not supported in Chromeleon, resulting in a software crash when it is used.
902006	**Thermo MS drivers – Stellar MS:** The "Import Compounds from Offline mzCloud" functionality is exposed in Method Editor of Stellar ICSW v1.1 (and lower) but is not supported in Chromeleon, resulting in a software crash when it is used.
902300	**Thermo MS drivers – TSQ MS:** With a TSQ MS, pressing F1 on the Thermo MS Tuning ePanel to open the online help in some instances results in an error "Unhandled exception: The calling thread cannot access this object because a different thread owns it." and causes Chromeleon to crash.
902301	**Thermo MS drivers – Tribrid MS:** With a Tribrid MS, pressing F1 on the Thermo MS Tuning ePanel to open the online help in some instances results in an error "Unhandled exception: The calling thread cannot access this object because a different thread owns it." and causes Chromeleon to crash.
902302	**Thermo MS drivers – Stellar MS:** With a Stellar MS, pressing F1 on the Thermo MS Tuning ePanel to open the online help in some instances results in an error "Unhandled exception: The calling thread cannot access this object because a different thread owns it." and causes Chromeleon to crash.
906566	**Vanquish CAD H/F:** For instruments that include a Vanquish Charged Aerosol Detector H/F (VH-D20-A or VF-D20-A) and another detector, the CAD can be disconnected or even switched off (without removing the detector from Chromeleon instrument configuration).

	Instrument methods where the usage of the detector has been deselected can nevertheless be run. SmartStartup functionality, however, is not supported in this case.
CM6-22760	**TRACE 1300 GC:** The autozero function does not work correctly for the FID, NPD, ECD and FPD detector types.
CM6-23614	**TriPlus RSH:** When using the TriPlus RSH in constant double pro headspace mode, starting a sequence that includes a constant double pro method will generate a validation error.
CM6-24043	**TriPlus RSH:** If firmware version 2.2 is installed on the TriPlus RSH autosampler, then tool changes on the instrument are not immediately recognized in Chromeleon. It is necessary to disconnect and reconnect the instrument after such changes are made; they will then be detected.
CM7-16030	**TSQ Quantiva and Endura:** With these instruments the standby state reports that the instrument is on, regardless of the real instrument state.
CM7-16154	TSQ Quantiva and Endura: When creating an Instrument Method for the TSQ Endura or TSQ Quantiva, the MS run time is not the same as the Chromeleon run time. The user should enter the correct run time on the MS page of the Wizard.
CM7-16557	**MSQ Plus and Tune Application:** When using the MSQ Plus with Chromeleon the user must wait for the Chromeleon Instrument Controller to be in idle mode before opening the Tune application. Without waiting, the MSQ Plus will not be able to change the operating mode (On, Off, Standby), or it will not be possible to run injections. To recover from this error both the PC and the MSQ Plus would have to be restarted.
CM7-17500	**Exactive Series:** Exactive Series instruments are usually shipped with a PC ("Exactive PC") that includes all the necessary instrument data files, such as calibration files, for operating the instrument. If you want to control an Exactive instrument using a different PC, make sure that the specific instrument data files residing on the Exactive PC are backed up and transferred to the new PC. For details on performing this process, please consult with your local MS field service engineer.
CM7-17668	**TSQ Quantiva and Endura:** TSQ Endura and TSQ Quantiva instruments are usually shipped with a PC ("Endura/Quantiva PC") that includes all the necessary instrument data files, such as calibration files, for operating the MS instrument. If you want to control an instrument using a different PC, make sure that the specific instrument data files residing on the Endura or Quantiva PC are backed up and transferred to the new PC. For details on performing this process, please consult with your local MS field service engineer.
CM7-20295	**TSQ 8000 and ISQ Series:** When a GC-MS instrument method includes a scan event containing multiple SIM ions (e.g. "SIM 115, 152, 188") then data from matching filters collected at different time ranges will not be combined into a single filter in the data for that injection.
CM7-21967	**TSQ Quantiva and Endura:** The TSQ Endura and Quantiva mass spectrometer method editor is supported on English operating systems with English/United States regional settings only.
CM7-22490	**Exactive Series:** When setting the divert valve parameters for an Exactive Series MS with a 2-position valve, the valve positions are recorded in the MS raw data opposite of how the divert valve parameters were configured.
CM7-23138	**MSQ Plus:** It is recommended to use only the MS driver provided on the Chromeleon installation medium. Other versions of the MSQ Plus driver may not be compatible with Chromeleon. Please consult your local field service engineer for additional details.
CM7-23669	**TSQ 8000 Series:** If you attempt to abort an acquisition of multiple timed acquisitions while the MS is acquiring data, the MS will not cycle back to a Ready state, and the sequence will not end. It is necessary to stop and restart the Instrument Controller to regain access to the instrument.
CM7-24445	**TSQ Quantiva and Endura:** Instrument methods written with an earlier version of the method editor cannot be opened with a newer version thereof.

CM7-25370	**Vanquish Duo:** Instrument Method, Electronic Report: An inverse gradient method created on Chromeleon 7.2.7 (or earlier) can be run on Chromeleon 7.2.8 or later. However, Chromeleon 7.4.1 does not support Smart Startup, Smart Standby or Smart Shutdown settings for inverse (or tandem) gradient methods. Hence in Chromeleon 7.4.1, for an inverse gradient method created on Chromeleon 7.2.7 (or earlier) any Smart Startup, Smart Standby and/or Smart Shutdown settings included in the method are neither executed nor reported.
CM7-25447	**Vanquish Duo Autosampler:** When adjusting the needle height, this is only adjusted for the left-hand sampler unit, and not for both sampling units as would be expected. Use the property Sampler2.SampleHeight to adjust the needle height for the right-hand sampling unit
CM7-25600	**TriPlus RSH / TriPlus 100:** When running the TriPlus RSH or TriPlus 100 in Clone mode (Autosampler serves two GCs), if the Virtual Terminal is opened from the ePanel of one of the GCs and a Sequence is started for the other, the Sequence fails with an error; “Sample – Error while validating script. (Trayplate 1: Slot 1:3)”. The workaround is to close the Virtual Terminal on GC1 before attempting to start the run on GC2.
CM7-25760	**MS Drivers:** When working with MS devices, the raw file must be created prior to the injection taking place. It is therefore expected that the time stamp in the raw file header differs slightly from the injection time noted in Chromeleon.

5.2 Limitations with the Waters instruments

ID	Description
148624	**Waters Alliance 2690/2695:** In very rare cases, a sequence is interrupted with the error message: "Acquisition finished by Chromeleon before first data point could be transferred. Maybe the run time is too short in case of blank run."
172741	**Waters Alliance 2695:** It is not possible to control a column selection valve installed in a Waters Alliance 2695.
181345	**Waters Alliance 2690/2695 and 2489 UV/Vis detector:** Very rarely a sequence interruption with an error message "Acquity System state has changed to error during run." is seen.
279507	**Waters eAlliance 2695 HPLC and 2998 Detector:** When trying to collect data, after the first injection the acquisition stops with an error message: "Acquisition finished by Chromeleon before first data point could be transferred. Maybe the run time is too short in case of blank run".
299266	**Waters eAlliance 2695 with Waters RID 2414 or PDA 2998**: In rare cases with a Waters eAlliance 2695 with a Waters RID 2414 or PDA 2998 data acquisition is not possible and an error message “Acquisition finished by Chromeleon before first data point could be transferred. Maybe the runtime is too short in case of blank run.” is shown.
317906	**Waters eAlliance:** The curve parameter is handled differently in the GPIB and LAN driver for the Waters eAlliance. For the eAlliance LAN driver if the curve is set to “6” in the Chromeleon IME, a linear gradient is performed. This is the same behavior seen with Waters Empower. Please note that by default the curve parameter is set to “5”. The value needs to be actively set to “6” to perform a linear gradient. Also, instrument methods created with the eAlliance GPIB driver are not compatible with the eAlliance LAN driver with respect to the curve setting.
331239	**Waters eAlliance LAN driver:** With an instrument method in which the parameter “HPLC_System.Pump.Curve” is placed right after the parameter “HPLC_System.Pump.Flow.Nominal” in the gradient script, Channel %A switches to 100% right after injecting. This can only be observed on the eAlliance display. Workaround: Set the parameter “HPLC_System.Pump.Curve” as the last parameter for a given gradient step. This is achieved when using the IME to create the gradient.

5.3 Limitations with Agilent ICF

For a general overview regarding the Agilent Instrument Control Framework, please refer to the document *Chromeleon and Agilent ICF – Quick Start Guide.pdf*, found in the \Documents\ folder of the Chromeleon 7.4.1 installation disk. For Agilent drivers, please refer to Agilent documentation.

ID	Description
148279	**Agilent ICF:** When the HS 7697A connects to the software, occasionally the following superfluous error is reported: "An ICF Driver call failed. Ensure that the instrument is connected and powered on". The message does not interfere with data acquisition and may be ignored.
172059	**Agilent 7697A:** The 7697 Headspace Autosampler has two options for handling missing vials: Pause and Abort. An issue has been observed when the Abort option has been selected. In either mode, the autosampler overlaps sample preparation, i.e.: sample 2 is prepared while sample 1 is acquiring. If the autosampler finds that sample 1 vial is missing, it will Abort or Pause the sequence at the point it discovers the vial is missing. However, if the autosampler finds that sample 2 vial is missing, while sample 1 is already acquiring, and the Abort option has been selected, the entire sequence will be aborted, including the acquiring sample 1.
172753	**Privileges:** The privilege “Control Instrument While Queue is Running” does not apply to ICF controlled instruments. This privilege only applies to actions through Chromeleon properties or commands (command box or standard ePanel elements). It does not apply to actions through the Agilent Status UI.
279914	**GC 6890 & PE Turbomatrix:** For an Agilent GC 6890 (controlled by the Agilent ICF driver) with a PerkinElmer TurboMatrix 40 Trap, if a wrong vial is placed in the oven, the run and sequence are not stopped. This in turn results in the sequence running continuously. This happens in a situation where single injections are added to a sequence over time and each time a new injection is added to the sequence the queue with the updated sequence is restarted. Also, the incubation time is significantly shorter than the analysis time.
CM6-23980	**Agilent 7697A:** When starting a sequence while the 7697A Headspace Sampler is in an ‘Error’, ‘Running’, or ‘Not Connected’ state, the ready check does not give an error message. After the sequence starts, the following happens: If the sampler is in error state, the sequence starts without getting interrupted. If the sampler is running, the sequence stops with audit trail message “Sequence stopped by user”. If the sampler is not connected, the sequence interrupts with audit trail messages “Lost connection to Agilent 7697A Headspace Sampler”, and “The instrument is offline. Check power to all modules, cabling between modules and whether the configuration matches the list of modules.”
CM6-23992	**Agilent 7697A**: The 7697 Headspace Sampler has two versions; 111- and 12-vial capacity configurations. The Chromeleon driver is written and tested with the 111-vial capacity version. Though not tested, the driver is expected to work with the 12-vial capacity module. The user should not use vial positions greater than 12 in this case. The rack view always shows 111 vial positions.
CM7-20259	**Agilent 7697A:** Although the vial position may be assigned in the instrument method script, unless this is done in the Instrument Setup Stage, the sequence table will not be updated. This can result in misleading information in reports and should be avoided.
CM6-24004	**Agilent 7697A:** Using the instrument front panel, the allowed range for Transfer Line Diameter is 200-600 microns. However, when setting this value in the Chromeleon instrument configuration the limit is 250-530 microns.

CM6-24005	**Agilent 7697A:** When 7697A headspace instrument method parameters are included in a report, the “fill pressure” parameter is rounded to the nearest integer.
CM6-24007	**Agilent 7697A**: Some parameters logged to the instrument audit trail are rounded to nearest integer. However, all values are downloaded to the instrument with the proper precision.
CM6-24008	**Agilent 7697A**: When editing an existing 7697A Headspace instrument method, if the values for Purge Flow, Purge Time or Leak Flow are changed, the Save button is not enabled until the user changes tabs.
CM6-24009	**Agilent 7697A:** When configuring an Agilent 7697A, there is an option in the user interface to “Upload Config from Instrument”. This option does not work. Instead, you will need to manually configure the instrument settings.
CM7-19540	**Agilent ICF - GC**: The Agilent GC System Configuration dialog includes entries to configure the 7697A Headspace, G1888A Headspace, 7890 GC, 6890 GC, 68550 GC, and 7820 GC. Currently, it is only possible to configure the 7697A Headspace sampler. Attempting to configure any of the other modules will result in a message indicating that the modules are not supported.
CM7-19975 **CM7-20451**	**Agilent 7697A**: The Soft Config option, available via the ICF for Agilent LCs, is not supported for the Agilent 7697 HS. It should not be added to any custom ePanel as its use can cause issues by allowing configuration changes to be applied to the sampler during acquisition.
CM7-23242	**Agilent 7697A:** Running multiple 7697A Headspace autosamplers on a single 247 Instrument Controller can cause Windows “Out Of Memory” errors, requiring a reboot of the 247 to resolve. Thermo Fisher therefore recommends that only one 7697A is connected to any 247 Instrument Controller.
CM7-25781	**Agilent 7697A:** The “Sample Bar Code Reader with data tracking” option on the Agilent 7697A sampler is not currently supported in Chromeleon.

5.4 Limitations with Agilent Drivers for Chromeleon

ID	Description
143602	**Agilent LC:** Agilent LC re-injects the same vial twice instead of going to the next one.
143713	**Agilent 12xx LC - Flexcube:** If an Agilent 12xx LC configuration includes the Agilent 1290 Infinity Flexible Cube, the Flexible Cube needs to be enabled in the instrument method. When creating an Instrument Method, Chromeleon provides an option (check box) to select if the Flexible Cube is used. If this check box is cleared, the sequence will interrupt. Workaround: Remove the Flexible Cube from the Instrument Configuration to run a sequence for which the Flexible Cube is not needed.
216488	**Agilent LC Autosampler:** When using pretreatment method for an Agilent LC Autosampler it is not possible to use a command like "Eject 40.0 µL to seat with 200 µL/min” via the user interface as this results in an error message. Agilent confirmed that this is known issue, which has been addressed with LC Driver 3.4. However, LC Driver 3.4 is incompatible with ADC drivers (version 1.x and 2.x) due to .NET restrictions. Workaround: It is possible to set this parameter from within the method script. However, reviewing the method via the graphical user interface different parameters are displayed.
411453	**Spectral Plot:** With Agilent Drivers for Chromeleon (ADC) version 2.4 it is not possible to view the spectral plot of Agilent FLD emission spectra. An error message "Spectral plot cannot be created. No spectra selected" is shown in the Studio. The FLD spectral data is stored as a 3DFIELD instead of FLField. Hence, Chromeleon Studio shows the spectral data in the UV-Vis Spectra plot, and the dedicated Fluorescence Spectra plot is not populated with the data. This is also documented in the ADC 3.1 Release Notes. Workaround: Use the UV-Vis Spectra plot

5.5 Limitations with other third-party instruments

ID	Description
141735	**Shimadzu Prominence-i Series:** A sequence was interrupted with the error “Abort Error: Timeout while waiting for the instrument to finish, the current injection will be aborted.”
161617	**Shimadzu LC 20 native driver:** If the flow rate for a pump has exceeded upper limit, the sequence aborts with an error “HPLC_System Fatal Instrument Error (-1073708575, 1).” The Shimadzu documentation states the following for the error code C00081E1 (hexadecimal converted from the decimal -1073708575):
171971	**Agilent 6850:** Instrument Configuration Manager does not report mismatches between the hardware and the Chromeleon configuration.
171972	**Shimadzu LC:** For the Shimadzu LC-10, LC-20 and LC-30 the instrument standby can be activated during a run from the instrument front panel.
171975	**Agilent 7890B GC:** With certain firmware versions, the GC does not properly send abort information to the software, meaning that events such as FID flame out, pressure errors, hardware faults and so on, will not be recognized or reported by Chromeleon. The problem is seen in FW versions B.02.01, B.02.04.2 and B.02.05, but not versions A.01.xx.x. The 7890A GC does not seem to have this problem.
171991	**Shimadzu LCs:** The Microsoft Visual C++ 2005 Run Time component is no longer supported by Microsoft. However, this component is required for the Shimadzu LC-2010A and Shimadzu LC-10A/20A/30A drivers and is therefore installed by Chromeleon.
172024	**Shimadzu LC:** Unlike most drivers, some Shimadzu UV detectors require that you select the 'Advanced' filter in the Command (F8) window in order to access the Lamp On/Off command.
172035 172036 172040 172043	**PerkinElmer LC200 Autosampler:** When upgrading from earlier versions of Chromeleon 7 CDS to Chromeleon CDS 7.4.1, it is necessary to reload the PerkinElmer LC200 Autosampler driver and configure the loop size within the configuration. The user should then check all instrument methods using this autosampler to ensure that they continue to function correctly.
172037	**PerkinElmer Clarus 400 GC:** Some users must select AutoSystem XL in configuration in order to communicate with the PerkinElmer Clarus 400.
172044	**Third Party Drivers - Agilent/HP 1200 HPLC system:** Occasionally, when using a combination of older and newer modules, the raw data was not correctly acquired.
172062	**Shimadzu LC-10A, LC-2010:** If the user cancels the key lock state of the front panel of the instrument and then, for example, stops a manual acquisition, this is likely to lead to unexpected effects during the next operation such as sudden abort of the sample run.
194996	**Shimadzu 2030:** When collecting UV data, in rare cases the signal drops to a very large negative number.
228857	**Shimadzu LC 2030:** Setting the instrument method to use "DataAcquisition=False" in the sequence run, may result in sequence interruption on the Shimadzu LC 2030 with an error message: “The following device is blocking the injection run termination: HPLC_System”. This is an issue with the Shimadzu LC Driver. Workaround: Set the instrument method to use "DataAcquisition=True".
256522	**Bruker Scion GC:** The drivers for the Bruker Scion 430 GC and Scion 450 GC are provided on the Chromeleon installation media. Installing these drivers causes a number of warnings in the Chromeleon IQ Report stating, "The file was not installed by any of the known packages." These warnings can safely be ignored.
303795	**Shimadzu LC 2010:** Occasionally the Shimadzu LC 2010 data acquisition is incomplete. Data acquisition stops in the middle of the injection and the injection finishes without an error message.

357361	**PerkinElmer Clarus/Autosystem:** The Cryo option for the PerkinElmer Clarus/Autosystem GCs is not supported.
465692	**Shimadzu SPD-M20A DAD:** The Shimadzu SPD-M20A DAD driver may scale single channel data wrongly on the time scale if the DCR is changed. This seems to occur in sequences with a blank run and if the DCR in the method is changed from the DCR that was set before the sequence was started. The 1D data for the first injection is wrongly scaled and the acquisition time is wrong. 3D data and 1D data extracted from 3D data have the correct time difference between adjacent data points.
854733	**Markes TD:** If an instrument configuration includes a Kori-xr, then methods created in Chromeleon versions prior to 7.3.2 will fail a 'Ready Check' when submitted as part of a sequence.
CM7-9675	**Agilent 7890 GC (legacy driver):** There is a backward compatibility issue that affects the Agilent 7890 GC Sampler Positions. When using a 7890 GC in combination with a 7693 sampler, certain positions in the sampler could give a misspelled value to a move command. This has now been corrected and could in rare cases lead to Instrument Method files needing to be updated to avoid errors.
CM7-12366	**Agilent 5890 DICE Card:** Please note the following when using the19257 DICE card with the Agilent 5890 GC:

5.6 Limitations with setup

ID	Description
226887	**MS Edge Webview2:** As part of the Chromeleon installation, the Microsoft Edge WebView2 Runtime will be installed, and its installation package is added to the package cache of the machine so that it can be reused for the repair/modify scenarios of Chromeleon. When uninstalling Chromeleon the corresponding package of the WebView2 Runtime component will be removed from the package cache of that machine. It is expected that this package will be kept in the package cache as this system component is kept on the system after the uninstallation of the Chromeleon software. Workaround: Select the Microsoft Edge WebView2 Runtime entry of the Add/Remove program dialog of the Windows OS system and click on the repair/uninstall option. Clicking Repair will connect to the Internet. The package cache is NOT recreated, but Microsoft Edge WebView2 Runtime is properly installed afterward. Clicking Uninstall will remove the Microsoft Edge WebView2 Runtime component from the machine.
254867	**Global Assembly Cache:** Depending on the state of the machine GAC the IQ of Chromeleon 7.4.1 may report the following recommendation: "C:\Programme (x86)\Thermo\Chromeleon\bin\System.ValueTuple.dll: The file is a shared library and a different version (System.ValueTuple, Version=4.0.0.0, Culture=neutral, PublicKeyToken=cc7b13ffcd2ddd51) of it is also installed into the global assembly cache including a binding redirect. The redirected library will always be loaded from the shared file's location and never this one. Please ensure that this is by intent and does not cause any unwanted side effects." The compatibility of these two different "System.ValueTuple.dll" file versions is very high, it is not expected that it causes any issue in Chromeleon, and the recommendation can be ignored.
367826	**Waters Driver Pack:** Setup in combination with Waters Driver Pack: Chromeleon versions 7.3.1 and older on a system with Waters Drivers Pack preinstalled; try to uninstall the optional component Waters Driver Pack during uninstallation of that Chromeleon version. During the upgrade installation from an older Chromeleon version to Chromeleon 7.4.1, this uninstallation routine of the pre-installed Chromeleon version (mentioned before) is executed before installing the new Chromeleon 7.4.1 components. Although the 7.4.1 setup did not request this component Waters Driver Pack, the uninstaller of the older Chromeleon version removes or tries to remove the Waters driver pack (depending on if the CM7 ISO file

	is mounted or not). After the installation of Chromeleon 7.4.1, the pre-installed Waters Driver Pack installation needs to be reinstalled.
858235	**Installation:** When installing Chromeleon 7.4.1 on a system where Windows Defender's Real-time Protection (or similar anti-virus software) is active, the system configuration step of the setup may occasionally fail due to the Chromeleon 7 Hardware Monitoring Service not being able to start in time. An error message "Could not start Chromeleon 7 Hardware Monitoring Service. The service did not respond in a timely fashion." is seen. Workarounds: • Exclude the Chromeleon installation directory from real-time scanning for the duration of the setup. • Exclude the Hardware Monitoring Service from starting via a response file. If the setup already failed, manually run PostInstallation.exe from the installation directory to try again.
872555	After installing the Windows 11 24H2 feature update, some systems with an **existing Chromeleon installation** show corrupted **a .NET Framework 3.5**, causing Chromeleon services and tools (e.g. CmDiscoveryService, StationAuditLogger, CM Console) to fail with .NET exceptions (MissingMethodException, TypeLoadException, AccessViolationException). This can **break production**. The IQ does not report a deviation, but .NET 3.5 reference assemblies may be missing, in particular: C:\Program Files\Reference Assemblies\Microsoft\Framework\v3.0\System.Runtime.Serialization.dll and System.ServiceModel.dll. Workaround: Repair "**.NET Framework 3.5 (includes .NET 2.0 and 3.0)**" by disabling and then re-enabling the Windows feature (via "Turn Windows features on or off" or equivalent administrative tools).
CM7-21780	**Setup - NIST**: NIST MS Search and Demo Library No Longer Automatically Installed: Incompatibilities of the NIST 2008 MS Demo Library installer with Window 10 could cause the main Chromeleon installer to hang or crash. To address this, the NIST Demo library, and the associated AMDIS and MS Search software are no longer automatically installed when you install Chromeleon. If desired, this package may be installed manually using the setup program found in the /Tools/ folder of the Chromeleon DVD. Alternatively, one may install AMDIS and MS Search using the full (licensed) NIST library installer. Note that MS library searching within the Chromatography Studio is not affected by this issue.
CM7-23341	**Setup – Agilent ICF:** When Agilent ICF is installed, the un-install of either Chromeleon or Agilent ICF fails if the Instrument Controller is running: "Failed to execute package Agilent Instrument Control Framework A.02.04. Another application has exclusive access to the file "C:\ProgramData\Agilent Technologies\Instrument Control Framework\RCDriver.log." Please shut down all other applications, then select Retry." To avoid this issue, stop the Instrument Controller before uninstalling.

5.7 Other limitations

ID	Description
138190	**Instrument Method:** Opening an instrument method that is assigned to a non-available instrument takes up to 40 seconds for the first attempt. Subsequent attempts are faster. The issue is caused by DNS resolution of the host name. Workaround: Create an instrument in simulation mode and assign the method to this instrument. Afterwards the instrument can be deleted. The DNS look-up will be faster as the physical PC still exists.
147417	**Report Variables:** The report variables peak.evaluate, chm.evaluate and injection.evaluate expect a formula in the invariant format (e.g. ',' as list separator, '.' as decimal symbol). The

	evaluation does not work if other regional settings (e.g. ';' as list separator, ',' as decimal symbol) are used in the formula text.
165516	**SIEVE NTMS**: Obviously incorrect results (e.g. Ratio = 99999.9, PR Element = -1) may be reported in Chromeleon when The SIEVE engine generates errors. These errors may be seen in the SIEVE log file found in C:\ProgramData\Thermo\SIEVE\
168759	Instrument Method Editor: Gradient Plot: If the time stamp of the first line (white background) in the equilibration stage (e.g., t = -3.00 min, Eluent = 100% B) is different from the one of the equilibration stage header line (orange background, e.g., t = -5.00 min), the gradient plot indicates that an equilibration with the eluent combination selected for the first (white) line in the equilibration stage (e.g., t = -3.00 min, Eluent = 100% B) is used from the start of equilibration (e.g. -5.00 min). However, the actual gradient starts at the time indicated (e.g., t = -5.00 min) with 100% A and ramps to 100% B at t = -3.00 min.
169879	**Sequence table:** In rare cases, a sequence completes, and some injections contain raw data, but the status shows "Interrupted" or "Idle" and the Inject Time field is empty. Raw data have been successfully acquired and stored on the local Instrument PC. The Injection Audit Trail on the Instrument PC contains complete information, including the missing details. Workaround: Remediation for this incident is manually re-executing the data upload from the local IPC to the Central Data Vault. Note: If you are affected by this problem, please contact your local Thermo Fisher representative for assistance with recovery of the missing injection details.
171965 **CM7-25633**	**Services**: In very rare cases if the Oracle database disk is running out of disk space and in addition an IPC cannot be connected properly, it may happen that a sequence cannot be uploaded automatically. When trying to reboot the IPC a retry of the upload may result in an error message "A transaction package is missing on the hard disk. The order of transaction packages which should be sent to the network data vault can't be accomplished." The sequence can't be removed from queue automatically. It needs to be removed manually.
171967	**Chromatogram Plot:** When creating a Virtual Channel, the Power Factor only increments in steps of 0.5, which does not provide sufficient flexibility for controlling the scale of the extracted data.
171968 **CM7-25551**	**Import/Export:** If two (or more) users simultaneously attempt to export a Sequence to the same location, a "Cannot export <sequence_name>" error is displayed for all.
171969	**Chromeleon Console:** If a Data Vault becomes unavailable, it is not automatically collapsed in the data tree despite its sub-folders and items being inaccessible.
171973 **CM7-25151**	**Scheduler:** Copy/Move Sequences: Scheduler jobs copying or moving sequences to a network data vault might run into a state where the jobs cannot be completed anymore. One has to restart the corresponding Chromeleon 7 Scheduler Service to get this kind of deadlock being resolved.
171974 **CM7-24972**	**Reporting:** When applying a two-level Autorepeat rule with double grouping to a plot object, if the sequence contains a large number of injections and a large number of components, it is possible that software performance will degrade significantly. This has been observed when applying Autorepeat to an MS Components plot for a sequence with 27 injections and 292 components.
171976 **CM7-24600**	**Spectral Library**: If a Chromeleon version older than Chromeleon 7.2.7 is used to create and name components from library screening results, then upon selecting the folder reference attempts to close the dialog with OK will result in an exception being thrown.
171986 **CM7-23484**	**Reporting**: In order to display the last updated date and time for a locked injection, it is necessary to use the Chromeleon report formula procMeth.version.time.
171987 **CM7-23442**	**Reporting:** In order to display the date and time in the Header/Footer of reports one can use the spreadsheet placeholders &D and &T respectively. During report creation these placeholders are replaced by the current date and time and formatted via the regional

	settings of the currently logged on Windows user account. However, this doesn't work correctly for every regional setting, e.g., 24-hour time formatting. Instead of using &D and &T one can use the Chromeleon report formula gen.currentTime or gen.reportTime together with the necessary format, e.g. {gen.currentTime; "dd.mm.yyy hh:mm"}. Note: the formula gen.currentTime is replaced by the current date/time during the electronic report creation. If you want to display the date/time when the electronic report is really printed or exported, you have to use the formula gen.reportTime.
171994	**Console - Data:** Empty Inject Time and GUID fields have been observed in a few single injections. Raw data have been successfully acquired and stored on the local Instrument PC. The Injection Audit Trail on the Instrument PC contains complete information, including the missing details. Too few instances have been reported to identify the root cause of this problem. Note: If you are affected by this problem, please contact your local Thermo Fisher representative for assistance with recovery of the missing injection details.
171997 **CM7-22145**	**Reporting:** Discrepancy in "Last Modified" Time: Owing to differing rounding methods used, it is possible that the value of the "last modified" time for an object in a sequence has a difference of 1 second between the client display and the value shown in a report. For more details, please see the Online Help.
172001 **CM7-21783**	**Processing Method:** Performance When Importing Fixed Calibration Standards for MS Sequences: When working with sequences of MS data, importing injections for use in a fixed calibration can take 1-2 minutes to complete, depending on the data.
172004 **CM7-21399**	**Queries:** Injection Variables 'Auto Dilution Ratio' and 'Retention Time Standard': Auto Dilution Ratio and Retention Time Standard columns are not available in the custom filter conditions for injection records (e.g., in the IRC editor or summary report).
172011 **CM7-20335**	**Comparison of Old Report Versions Shows Change in CmbxExportParameters:** If a report which was created in Chromeleon 7.2 SR2 or earlier, and modified in SR3, has its history compared in SR4, the history will appear to show that the "Cmbx Export Parameters" value has changed from True to False. This is due to a change in the default value of this field and does not represent any user modification of the report.
172016 **CM7-19836**	**eWorkflows:** The eWorkflows wizard fails with a message "Failed to retrieve the required Data Vault" when there is more than one Data Vault with the same name in the Chromeleon Domain.
172018 **CM7-19336**	**Import Chromeleon 6:** Due to changes in Auditing between Chromeleon 6 and Chromeleon 7, when a Chromeleon 6 Sequence is imported into Chromeleon 7, some of the text displayed in the Instrument Audit trail will not appear exactly as it did in Chromeleon 6. Refer to the topic "Viewing Chromeleon 6 Data" in the Online Help for further information.
172020	**Export:** With this release, a new feature has been introduced that supports exporting chromatography, 2D and mass spectrometry (MS) data together in a single Raw file. See section 3.12.1
172023	Console – Instruments, Online Plot: For the Vanquish CAD, some properties and two channels are recorded where the data is transmitted as aA and scaled to pA with 6 digits resolution. The online plot displays these numbers for the current signal value with 2- digit precision only.
172025 **CM7-17841**	**Report Designer:** If using a non-Chinese format as the regional setting in Windows, and Chinese as the setting for non-Unicode programs, then the header on a Chromeleon report is not correctly displayed for variables. If the format is changed to Chinese, then everything is correctly displayed.
172028 **CM7-17465**	**Processing Method:** On the MS Settings page, the spectral bunching value for Peak Dependent Correction that is displayed as an annotation on the chromatogram plot may not match the value entered in the processing method on the MS setting page. This is by design because the method setting defines the maximum number of spectra for averaging.

	The actual number of spectra used is determined by the number of MS spectra which fit the filter used for the chromatogram. This is not correctly documented in the Chromeleon Online Help.
172029 **CM7-17203**	**Report Designer:** With some date/time formatting settings in the report, the order of month and day changes for some formats automatically. The settings in the Report Template can change based on the Windows regional settings. For example, it is not possible to set m.d.yy as format with German regional settings. The Report Template replaces this with d.m.yyyy. The substitution occurs for report variables and non-report variable entries.
172047 **CM7-11692**	Console: Instruments: When monitoring the baseline with an overlay chromatogram added to the signal plot, the overlay may disappear after changing to a different ePanel and back.
172453 **SWFR-248**	**Waters Empower Import:** The following limitations apply to the import of data from Waters Empower: 1. Time zone information is not supplied by the Waters toolkit API, so dates and times will be imported as if they were local. 2. Empower allows injections that are not contained in sample sets. These are not visible to the importer and cannot be imported unless added to a sample set. 3. Some peak results fields show incorrect units in Chromeleon since there is currently no mechanism to change the units on 'core' fields. They are included correctly in custom fields that by default are hidden.
172727	**eSignatures:** For sequences containing manually manipulated XICs saved in a software version older than 7.2.6, if the sequence was signed in a later software version without viewing the manually manipulated XICs, then verification could fail if the XICs were subsequently viewed before the verification. To resolve this situation, remove the signature, view the manipulated XIC, and re-sign the sequence. Then view the manipulated XICs once more before verification.
172734	**Non-Targeted MS Processing:** Due to limitations in the Sieve processing engine, it is only possible to perform NTMS processing on system with en_US localization (i.e. non-US localized systems are not supported)
172748	Queries: When using Oracle as a data vault server, text-based queries (e.g., searching for an injection name) are case sensitive. So, for example searching for "Extract" would not return matches for "EXTRACT" or "extract". This limitation does not apply to SQL Server data vaults since SQL Server text searches are case insensitive.
174091	**Console - Data:** When a sequence is being added to the instrument queue, there is a brief period of time when it is possible to rename the parent folder while the operation is still in progress. When this happened, the automatic upload at the end of the acquisition failed and the sequence got stuck in the instrument sequence queue. This is because the original folder name could no longer be resolved, and so the data transfer link to the central data vault was broken. The folder name also could not be reverted to resolve the situation because once the sequence is queued, it is marked as redirected, and the parent folder becomes locked, preventing renaming. Workaround: In this case, a manual move operation needs to be executed to remove the sequence from the queue.
195555	**Chromeleon Studio – Reporting 1.0:** Spreadsheet function TRUNC() in the report designer truncates numbers by their binary coded representation which is not 100% identical to their corresponding decimal representation which is either entered manually or formatted to a certain precision by a corresponding formatting expression. Thus, it might happen that the TRUNC() function results in a truncated number which is not the number you would expect when truncating its decimal representation. Example: TRUNC(1,2671; 4) returns 1,2670 instead of the decimal expected 1,2671. Issue is a known limitation of Reporting 1.0, but it is fixed in Reporting 2.0.
215589	**NTMS:** When processing NTMS data using the SIEVE algorithm, at times the molecular weights of similar samples may differ, even though the molecular masses are very

	similar. This is a consequence of how the SIEVE algorithm analyzes the data and is to be expected.
231359	**Data Import:** Import of CMBX files by previous Chromeleon releases or into data vaults with an old database scheme: Chromeleon 7.3.2 is using a new database scheme for data vaults which records the logon role in the data audit trail. If a data object (e.g., sequence) contains data audit trail records with a role and the data object is exported to a CMBX file, the import of such a CMBX file by a previous Chromeleon release is still possible. Yet the imported data object cannot be modified anymore. Any attempt to modify it runs into a corresponding error message. A similar scenario is also present if you import the CMBX file by the Chromeleon 7.3.2 into a data vault with an old database scheme.
231464	**MS Plot:** When viewing profile mode mass spectra, Chromeleon labels peaks with the actual apex m/z of the profile data. In contrast, the FreeStyle and Qual Browser software will label profile mode mass spectra with the centroided m/z. This can result in minor differences in the data displayed between these applications.
231883	**eWorkflows:** The sequence layout in an eWorkflow for a pair of linked instruments must only contain a Sample Block. If the eWorkflow contains Header, Footer or Bracket blocks, then the eWorkflow can only be run in 'single instrument' mode.
232285	**Injection Queries, Audit Trail Queries And NTMS Frame/Results Filters:** Rules that compare floating point parameters to a fixed value using the "=" condition will not round or truncate values when performing the comparison. This means for example, that the rule "mass = 123.4" will not match a mass of 123.42.
234256	**Queries:** If a user is not a member of an access group assigned to a folder, attempting to create an injection or audit trail query will fail with a misleading error message about a missing privilege, even if the user does indeed have the required privilege.
236172	**Discovery:** Chromeleon 7.2.x and Chromeleon 7.3.x client machines need to disable the option "Receive push notifications" in the discovery configuration dialog to be able to join a Chromeleon domain of Chromeleon version 7.3.1 or higher. Chromeleon 7.2.x and Chromeleon 7.3.x client machines that are already part of a Chromeleon 7.3.1 or higher domain and have "Receive push notifications" enabled will not receive any push notifications, as this feature has been removed with Chromeleon 7.3.1. Enabling "Poll for updates every <number> seconds" is required to receive the latest discovery information.
238857	**Network Data Acquisition:** If a sequence is interrupted, the following error message might be observed: "*Could not connect the replication service. A TCP error (10051: A socket operation was attempted to an unreachable network) occurred while transmitting data. A socket operation was attempted to an unreachable network*." This message has nothing to do with the customer network, and it means that data cannot be saved locally. To remove the confusion, this error message was changed to: "*Connection to local communication stack failed.*"
240632	**Interactive Results:** Trying to insert a report table without header rows (e.g. MS Instrument Method (XRAW), Instrument Method / Overview) in the Interactive Results pane leads to an error message 'Invalid cell reference' in the upper left corner (A1) of the inserted new sheet". Such report tables can still be successfully inserted in the Report Designer.
245276	**DDK Drivers:** An injection may not terminate when an Abort error happens at AcqOn time for 3D channels.
250819	**CMBX-Files and Peak Group Calibration Levels**: if a CBMX-File has been created by a Chromeleon Version 7.2.10 MUa(b,c,d) for a sequence containing a processing method with peak groups, the amount values for the calibration levels of the peak groups were not saved into this CBMX file. If such a CMBX file is now restored by any Chromeleon version being able to read this CMBX file, the amount values for the calibration levels of peak groups are reset to 1.0.
257813	**Chromeleon Studio - Reporting 1.0:** Report Designer + Issue with Rounding "away_from_zero". Workaround: in Reporting 2.0 this issue is not observed, please use it instead.

262823	**Electronic Report** contains outdated information, mismatch with Report Designer. Three available workarounds: 1) avoiding the INDIRECT function using the reference directly in a formula 2) change the cell value of the argument for INDIRECT to a formula, for example, AnotherSheet!A123 becomes ="AnotherSheet!A123" 3) add a "hidden" cell outside of printing area with a formula only to provide the references to further sheets , e.g. =AnotherSheet!A1
267233	**Chromeleon Console - ePanels:** ePanels spontaneously change the background color of Edit Field controls to LightPink and sometimes the Edit Field controls look empty. Workaround: Pressing F5 refreshes the console and populates the value in the Edit Field. The following actions were reported to temporarily (for a few days) solve the problem: • Type a value in the Edit Field or click inside the Edit Field and then click ESC, and the correct value becomes visible. This must be repeated for every affected Edit Field on the affected ePanel. • Close and re-open Chromeleon.
276956	**Instrument Controller:** OnlineExtract for MS Channel does not perform smoothing when programmed in a script. While the command "OnlineExtract" provides smoothing parameters, these are not applied to MS mass trace signals created with the "OnlineExtract" command.
282151	**Instrument Method:** If the chromatographic portion of an instrument method is changed without changing the MS portion of the method, the instrument method and MS instrument method can show a different date/time modified. This is due to the nature of the integration of the MS Instrument Method Editor into the overall instrument method and is to be expected.
286257	**Baseline Monitoring:** If during a ready check the warning “UV Lamp house temperature not yet stable.” appears, it is not possible to store data acquired during a baseline monitoring to a sequence using “Stop and Save As”.
287972	**Excel-Export:** When exporting Chromeleon Reports to Excel-Files incl. graphical objects (e.g. Chromatogram Plot) and using a computer screen scaling greater than 100% at the same time when the export is executed the graphical objects in the created excel files will not display the complete graphic which you see in the Chromeleon report designer but only a part of it or even nothing. This only happens when using legacy report templates. Report Templates 2.0 do not show this behavior. Using the Chromeleon excel export we strongly recommend using Report Templates 2.0 which are available since Chromeleon version 7.3.2. Otherwise, your exported excel files might contain graphical objects with incomplete content or even no content at all.
299483	**Special characters:** A special character (for example, the unicode control character “Record Separator”) in the comment for an injection (in the injection table) will cause a Ready Check error. A sequence run aborts with an error message “hexadecimal value 0x1F, is an invalid character”.
315678	**Network Data Acquisition:** It was observed that sequence upload can fail with the following error message: "*Client received an invalid WCF command result type.*" To prevent this issue, it is required that the Temp folder of the raw data storage location is excluded from scans or usage by other external tools.
336304	**Local Data Vault:** On a system where the data vault "ChromeleonLocal" is not present or not accessible and a local data vault is mounted, but not accessible, trying to import an instrument configuration shortly after the start of the Instrument Controller results in an error: "Chromeleon Instrument Configuration: Remote instrument controller can't save configuration. The Instrument Controller does not respond. It is probably very busy."
356523	**Unicode characters:** Unicode characters (such as Greek letters or special characters) are not properly displayed in the Console and in the Instrument Configuration. However,

	Chromeleon can handle Greek characters on a Greek system and Chinese characters on a Chinese system, but e.g., not Greek characters on an English system.
372730	**IPD:** If the Output Mass Range on the Algorithm Parameters page exceeds the range of the data, the x-axis range of the Deconvoluted Spectrum plot will be limited to that of the available data.
375765	**Processing Method:** If a processing method created in version 7.3.1 or earlier is opened in version 7.3.2, repeated edit and save operations within the same Studio session may cause the UI of some tabs (e.g., MS Settings, Calibration or Advanced) to be incorrectly scaled, obscuring some of the controls on the tab. To prevent this from occurring: 1. Select 'Processing Ribbon' >> 'Layouts' >> 'MS Quantitation'. 2. Add or remove any tabs as desired. Save the method.
377930	**Instrument Audit Trail:** Driver issues (and possibly using Triggers) can lead to huge Instrument Audit Trails if messages are logged repeatedly in the Instrument Audit Trail at high frequency (several thousand messages per second). This results in the (Daily) Instrument Audit Trails growing to a size of several dozen MBs. Trying to open such a large Daily Instrument Audit Trail crashes the client, e.g., with a System.OutOfMemoryException and can even lead to the Chromeleon client crashing immediately after start.
391203	**Large File Transfer:** Copying of sequences carried out by large transfers feature enabled in Global Policies doesn't work well when source or destination data vault becomes dismounted.
412695	**Atlas:** When an Atlas workbook using Internal Quantitation is imported into Chromeleon, previously an exception was thrown, and the import would fail. Now, the workbook is successfully imported. The Atlas Internal Quantitation mode isn't supported, but the Atlas results are available for viewing. A warning message is logged for each component indicating that the Internal Quantitation for the component cannot be set and is set to External Quantitation.
417332	**Chromeleon Studio Ribbon:** Very quick selection of multiple panes in the Data Processing Ribbon by the user in the Chromeleon Studio does not remove tabs from different context in the Ribbon. This doesn't happen if user clicks more slowly.
429916 **459845**	**Queries:** If the user has 2 or more roles associated, the user cannot access the data vault properties within Chromeleon Administration Console, these can be only accessed from Chromeleon Console (Data vault properties). Query selection in the Scheduler editor is affected as well. These limitations only apply when using special set of access groups for data vault access control. The limitation will result in the following message: You are not in any of the access groups.
437606	**Chromeleon running on an IPC with Palo Alto Networks® Cortex XDR®:** When running an Orbitrap Exploris 120 results in a failed Ready Check with the error message "ValidateMethod timed out".
446842	**Studio:** The Elemental Composition calculator does not support non-US regional decimal settings. Calculated compositions in non-US regions may be inaccurate. This is a consequence of the regional setting to use "," (comma) for the decimal separator and is to be expected.
451895	**Chromeleon Studio - Reporting 2.0:** Spreadsheet functions with a certain stack-level are not working after saving the report template. Workaround: use Intermediate results in separate cells to avoid stack levels above 8.
452168	**Intact Protein Deconvolution:** In rare instances, as a result of overlapping isotopic envelopes in the data, mass shift discrepancies of 1 Dalton can occur when using deconvolution algorithms due to some of the complexities that are involved in deconvolution. This is a relatively well-known limitation of deconvolution algorithms. Workaround: Using Biopharma Finder 5.0 (and higher), users can select the "Sequence-specific" option from the "Isotope Table" menu under the Xtract parameters and link a target sequence to the method. The isotope table will automatically be generated by the software

	and use it as the theoretical isotopic distribution for the data. However, this functionality is not currently provided in Chromeleon
467367	**Intact Protein Deconvolution (IPD):** It is not possible to run Intact Protein Deconvolution on Shimadzu CDF files with a 'Sliding Window' Processing Method. This is because some data formats for importing do not provide enough information about the data to then allow a preferred scan filter to be generated by the deconvolution engine, resulting in an error message "Deconvolution Error. Preferred scan filter is not found in the raw data file." This error is not seen with the 'Average' Processing Method.
491669	**Atlas:** If the End Trend value is set to 1 in the Atlas processing algorithm, there is a small chance you may see a crash. Change the End Trend value in the Atlas processing algorithm to 2 and reprocess.
587083	**Instrument Configuration Manager:** If the Instrument Configuration Manager is terminated while an instrument configuration is in progress, after a restart of the Instrument Configuration Manager another instrument configuration may be rejected with an error message "The instrument controller service appears to be busy. Cannot change configuration. Try again later."
633403	**Ribbon Customization in the Chromeleon Studio:** If the User selects the chromatogram pane and opens the ribbon customization dialog, then after clicking OK, there are unexpected "Insert" controls on the Processing tab of the ribbon (regardless of whether customizations were performed or not). This state is temporary. Close and re-open the Studio to restore the state with a single "Insert" control.
746721	**Import/Export:** In some cases, it would happen that whilst importing Empower data sets into Chromeleon, the import process would not complete, and no error messages would be observed. The import process now provides appropriate status updates throughout the import process and Empower sequences can now be imported successfully, however, while the import process has been improved, errors may still occur when attempting to import larger multiple sequences.
752180	**Instrument Configuration Manager:** In some instances, the first start of the Instrument Configuration Manager (ICM) is slow (approx.1-2 minutes). A second start of the ICM is much faster.
775543	**Instrument Method Run:** A user without the privilege "Control Instrument While Queue is Running" cannot confirm a message box from an instrument method. Trying to run an instrument method with the "Message" command in the instrument setup or in the inject preparation stage results in a message box. Trying to confirm this message box with "OK" results in an error message: "The privilege "Control Instrument While Queue Is Running" is missing." and the instrument method run does not continue. The user lacking the privilege "Control Instrument While Queue is Running" can only abort the sequence run.
758318	**Chromeleon Studio - Report Designer 1.0:** Unable to insert/copy sheet. In case there are too many hidden chromatogram plots contained within the report template, GDI default objects limit per application is reached and an out of memory application crash occurs. Workaround: It is possible to increase the GDI objects limit per app on specific PC. For the case of this scenario, increase to 20000 is sufficient.
795921	**Chromeleon Studio - IRC:** When adding injections to the processing method from the network data vault using the IRC, all data items located in a network data vault must be downloaded by either the scheduler or the replication framework before the execution of the queue or sequence starts.
802927	Data Audit Trail does not show changes correctly (cell range references) of an external Report Template when applied to a sequence. There is a partial workaround - either adjust the sequence so that the report template is stored in the sequence itself or unlink the report template from the sequence, adjust it and apply it back to the sequence.
810225	**Instrument Method:** With the regional format in Windows set to a format that uses a comma as a list separator, e.g., English (Germany), creating or editing a Virtual Channel in the

	Instrument Method Editor Script Editor is not possible. When entering the parameters an error message "Unexpected character(s) at end of line." is shown. Workaround: Option 1) In the regional settings the list separator to ';' (semicolon). Option 2) Enter the parameters directly in the value field and use ';' (semicolon) to separate the individual command parameters
810249	**Instrument Method:** In some instances, if an instrument method is modified by creating a virtual channel Chromeleon closes without an error message. Workaround: Copy the virtual channel step from one instrument method script to another instrument method script using copy/paste. While it is not possible to specify virtual channels in the Instrument Method Wizard, it may be possible to specify virtual channels in the Instrument Method Editor.
825657	**Chromeleon Studio - Reporting 2.0:** Raw Data Table does not have 'Table Filter' context menu option available. Partial workaround: Use 'Table Properties' filter option. This allows you to set up range filtering at least for the 1st column (Time) of the Raw Data Table. There is no workaround for filtering of remaining columns.
857208	**Injection Query:** Results of an executed Injection Query cannot be printed directly using the *Print Report* option in the results toolbar. **Workaround:** Save the results as a new Sequence and print from the Sequence, or attach a Report Template to the Query, open it in Studio, and print the report from there.
859118	**Ardia Instruments app:** Ardia Instruments 1.1 application is not compatible with instruments configured in Chromeleon 7.4. Workaround: To view the instruments configured in Chromeleon 7.4 in the Ardia Instruments app, update to Thermo Scientific Ardia Platform with Ardia Instruments 1.1.1 and install Ardia Platform Link 1.2 on the instrument PC.
861240	**Chromeleon Studio - Reporting 2.0:** Out of memory exception during creation of electronic report containing large raw data table. Partially the memory issue can be remediated if the number of displayed rows in the Raw Data table is reduced. In order to do so, please use time range filtering in Properties settings of Raw Data Table.
861302	**Chromeleon Studio - Reporting 2.0:** Using any variable from the formula "Report Template" category always returns "n.a." value.
861307	**Chromeleon Studio - Reporting 2.0:** Conversion from Reporting 1.0 into 2.0 gives different values when sheet is protected. Workaround: unprotect report sheets before converting Report Template (1.0) into Report Template (2.0).
875688	**Instrument Methods:** In certain cases, users who have permission to copy, but not modify, Instrument Methods may create a new sequence containing changes to an Instrument Method that were not saved to the source Instrument Method. The Instrument Method Data Audit Trail in the sequence records a Changed operation.
887399 **917302** **919823**	**Chromeleon Studio:** Reports (1.0; 2.0) generated with "fixed row height" result in long delays, time out error, and software closure. <u>Workaround</u> Change "fixed row height" to "automatic row height". Using automatic row height, reports generate quickly and without issues. Another workaround is to manually delete all unused ROWS in each sheet. Following needs to be done: - select some row below the used area - enlarge selection to all remaining rows by (CTRL+SHIFT+Down Arrow)

	- delete selected rows ("Home Ribbon" => "Cells & Sheets group" => "Delete" => "Delete Sheet Rows") - repeat this for each sheet in the Report Template - save the Report Template
899752	**Imported Sequences:** In certain cases, users without the privileges required to modify sequence data may convert an imported sequence to Chromeleon Processing. The conversion is saved as a new version of the sequence and a Sequence Changed audit entry is created.
919019	**Large Transfers:** It was observed that Large Transfers fail when the source, transferred data, or destination contains access control lists (ACLs), even if the user has the required permissions. Users with permission may be able to queue such transfers, but the transfer will fail. A fix is planned for the next release.
920610	**Chromeleon Studio:** When working with MS libraries in NIST format, "Molecular Weight" greater than 2000 cannot be entered in "Select Spectrum Metadata" and "Add Spectrum" modal windows. This limitation exists in order for Chromeleon to remain consistent with NIST MS Search 3.0 application.
925395	**Atlas Import:** When importing legacy Atlas data into Chromeleon, the comment field of the Atlas Workbook properties is not imported into Chromeleon.
934781	**Chromeleon Console - Query Privileges:** Users granted the *Move Instrument/Data Audit Trail Query* privilege cannot move Data Audit Trail Queries or Instrument Audit Trail Queries unless they are also granted the *Delete Instrument/Data Audit Trail Query* privilege. No other query types or data objects are affected. A fix is planned for the next release.
937247	**Chromeleon Console:** When a user attempts to move a folder to a location that already contains a folder with the same name, and access to that folder is restricted by ACL permissions, the Console may terminate unexpectedly. This issue is a known limitation in Chromeleon 7.4.1 and is planned to be resolved in the next release.
938427	**Chromeleon Studio - Report Designer:** Report defective with "42 ist keine unterstützte Codepage". Currently there is no workaround.
939441	**Chromeleon Console – Signed Sequences:** If a folder contains a signed sequence, the folder can only be set to Read-Only from the local PC hosting the Data Vault that contains the folder. Attempts to set the folder to Read-Only from a remote PC will fail. This issue was inadvertently introduced in Chromeleon 7.3.2 MUf and Chromeleon 7.4, and it is planned to be addressed in the following release.
941103	**Usage of ghost signals as fixed channels:** When MS signals are extracted while a sequence is running, persistent signals can only be created for finished injections. For injections that are finished later on, so called ghost signals are created under the hood based on the signal extraction settings of the existing persistent signals. Ghost signals as well as persistent channels can be specified as fixed or selected channel for various Chromeleon report tables, report formulas and plot objects. The usage of ghost signals as fixed channels may work fine in interactive Data Processing and Reporting category; however, it fails if reporting is done in a background process. As a result, visualization of chromatograms and evaluation of report variables that use such ghost signals as fixed channels, fails for Electronic Report generation and Batch Reporting. Workaround**:** Make all ghost signal persistent by right clicking the corresponding channel in the Studio navigation pane and select context menu item 'Keep as Channel...'. Hereby, already persistent signals are not overwritten.
942704	**Electronic Report:** Electronic report is not created from print preview settings if electronic report does not exist.
943350	**Instrument Method:** If you open an Instrument Method in the Studio, the Instrument selection dropdown in the ribbon always reflects the filter selected in the Navigation pane of the Instruments category in the Chromeleon Console. Attempting to select a different filter closes the dropdown, and the new filter is not applied. This issue is planned to be fixed in the next release.

	Workaround: To change the filter applied in the Instrument selection dropdown in the Instrument Method category of the Studio, apply the desired filter in the Instruments category of the Chromeleon Console, then close and reopen the Instrument Method in Studio.
946686	**eWorkflows:** When changes are made to Max brackets per sequence or Number of injections in the Sequence Layout tab of an eWorkflow, these changes are not displayed correctly in the Show Changes view of the eWorkflow Data Audit Trail. In this view, Max brackets per sequence may be shown as Max brackets, and changes to Number of injections are not reported. The underlying values are saved correctly.
947365	Dataprocessing on MS Sequence is very slow. If a report sheet contains a table with complex form (using peaks from UV Channel and peak deconvolution to look at MS traces of those peaks), it takes very long time to display the results depending of number of peaks detected. This time can take up to half an hour on each switch of a report tab or clicking to the next injection. Furthermore, starting creation of an electronic report is taking multiple hours - even when only one injection is including this report tab.
952244	**Large Transfers – Oracle Data Vaults:** If a Chromeleon domain contains Oracle Data Vaults and some PCs are not fully configured to access them, Large Transfers to Oracle Data Vaults are supported only when the data is transferred from a machine that has access to the source Oracle Data Vault. If a Client PC that has access to the Oracle Data Vault initiates copying of data from a machine that does not have access, a regular copy operation is performed instead, even when the data size exceeds the threshold for a Large Transfer. In addition, if the transferred data object is a folder and the source Data Vault has *Copy...* privileged actions enabled, then copying to an Oracle Data Vault currently fails with the following error: *"Cannot access a disposed object. Object name: 'WaitingDialog'."* Workaround: If the folder to be copied does not contain a subfolder that would also trigger a Large Transfer, first create a copy of the folder at the destination location, and then copy its contents. Alternatively, disable Large Transfers temporarily.
952251	**Large Transfers:** Chromeleon 7.4.1 expands the scope of copy operations that can be performed as Large Transfers. In addition to copying one or more sequences, copying a folder is now also eligible, provided that the folder size exceeds the configured threshold. However, in this case there is a known limitation that authorizations and comments related to *Copy...* privileged actions are not requested as they would be for regular copying. In addition, in this case only the *Copy Folder* privilege is checked and the additional *Copy...* privilege checks for the data object types contained within the folder are not performed. When Large Transfers are triggered by copying one or more sequences rather than by copying a folder, privilege checks and privileged actions continue to function as they would during regular copying. Harmonization of privilege checks and privileged actions between regular copying of folders and their copying with Large Transfers will be addressed in the next release.
CM7-22986	**During stress tests with multiple, very long sequences with more than 1000 injections, the queue was aborted with an unexpected error:** “Queue End 24.12.2016 16:27:22 +01:00 Stopped the sequence queue run. Sequence End 24.12.2016 16:27:22 +01:00 End of sequence “Simple Vanquish Test 2016-12-21 19_37”. Abort Error 24.12.2016 16:27:21 +01:00 The injection audit trail cannot be saved. Error detail: Die Transaktion wurde abgebrochen. The transaction commit operation failed. The save operation failed for data item(s) ‘”chrom://c-germoefelein/Xvault/Vanquish-H/6/Simple Vanquish Test 2016-12-21 19_37.seq/277.smp/Audit.audit’”. Execution of txp [05f69eb4-c9ed-11e6-9598-005056c00008] failed. Error message: The command ‘UPDATE CJ_VERSION SET VERSION_LAST_SIBLINGS_TXN_NO = @P0 WHERE CJ_VERSION.VERSION_INVALIDATE_TXN_NO > @P1 AND CJ_VERSION.PARENT_ID IN (@P2)’ failed.” As a workaround it is recommended that automatic upload be disabled when running very large sequences and uploading them manually instead.

CM7-23051	**Audit Trail:** In a few cases, sequences have been reported to abort with messages in the audit trail that were not conclusive, such as: “The injection audit trail / signal “…” cannot be saved. Error detail: The transaction has aborted. The transaction commit operation failed.”
SWFR-2543	**Sampling Devices That Do Not Use uL As Units for Volume:** Although most liquid injection devices expect volumes to be entered in uL, there are a few devices (e.g., Thermo AS-HV and PerkinElmer GC Autosampler) which do not use µL as their default volume unit. If one of these devices is configured in the same instrument that also includes an injection device that uses µL, problems may be observed with volume validation in the sequence table as well as units associated with volumes in reports.

6 Backward/Forward compatibility issues

6.1 Chromeleon Enterprise compatibility between Chromeleon versions

In general, for customers with Enterprise Chromeleon systems, Thermo Fisher Scientific does not recommend connecting clients or IPCs with different versions of Chromeleon into the same Chromeleon Domain.

Features available in newer versions, such as eWorkflow versioning, automated reporting, automated LIMS export, and so on, may not work correctly with data created or acquired on an older client or IPC.

Similarly, if data that was created on a newer version of Chromeleon is accessed from a client running an older version, then the data can be opened, edited, and saved without losing any parameters specific to the newer version. But any new parameters, like data processing enhancements or newer report variables, will not be included in any data processing as they are “invisible” to the older client and may cause results or reports to be generated with different values to those which would be generated on the newer version.

Additional restrictions may also apply. If you have any questions or concerns, please contact your local Chromeleon support channel.

6.2 CMBX file compatibility between Chromeleon versions

CMBX files are used for transferring data and data objects between separate Chromeleon systems.

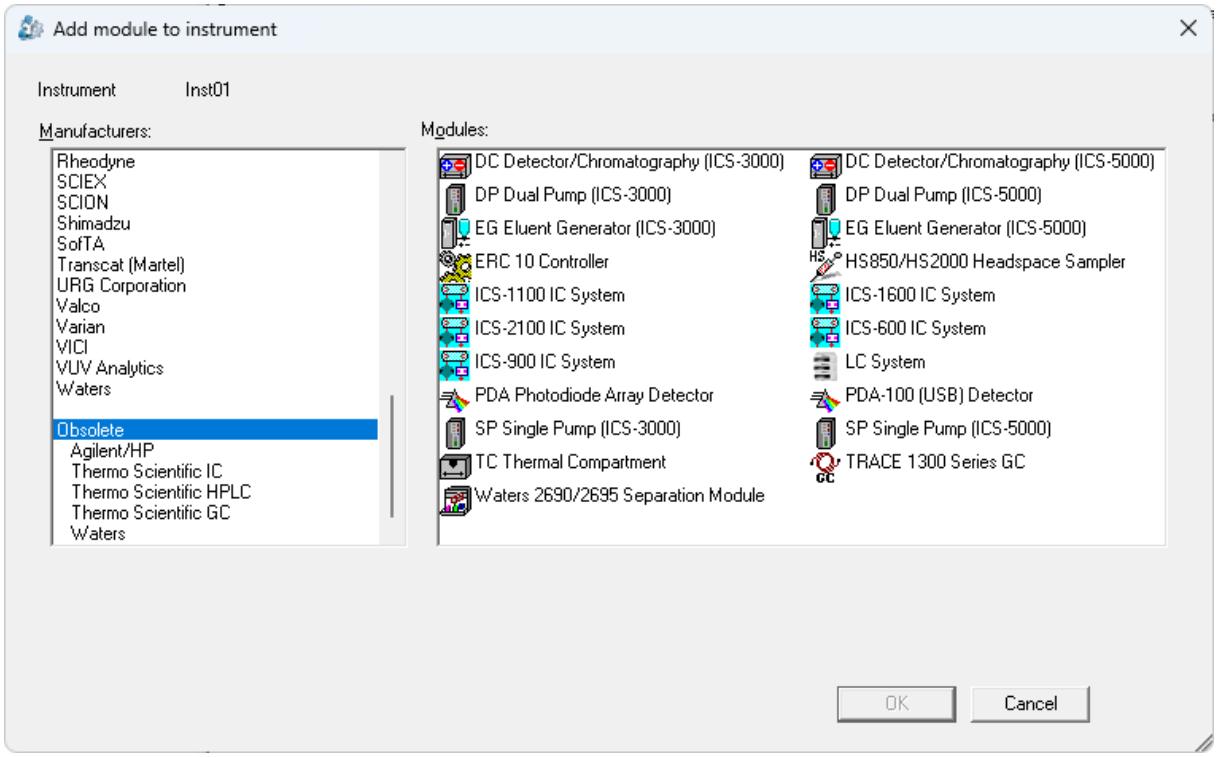
CMBX files may be considered “forward compatible,” that is, a CMBX file generated by an earlier Chromeleon software release is always readable in newer releases of the software.

However, the reverse is not true. A CMBX file generated by a newer release of Chromeleon software should **NOT** be imported into older releases of the software. CMBX files generated by newer software releases may contain database schema extensions that are unrecognizable in older software releases, causing significant problems or damage to the data vault of the older release.

Additional restrictions may also apply. If you have any questions or concerns, please contact your local Chromeleon support channel.

6.3 Obsolete instrument drivers

Chromeleon includes a number of obsolete instrument drivers which are included to provide backward compatibility with existing installations. The complete list of drivers may be found in the Obsolete category of the ‘Add module to Instrument’ dialog in the Instrument Configuration Manager:



Please note that issues reported for any of these drivers will no longer be addressed. If you are using one of these drivers, Thermo Fisher Scientific recommends migrating to a supported driver as soon as possible.

7 Legal notices

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7.2 Revision history

Revision	Date	Comment
1.0	Aug2026	First issue