Getting Started

AppsLab Library of Analytical Applications

Software Version 2.5 • October 2019

thermoscientific

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Document History

Revision: 1.6. This manual is the original manual.

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1 Introduction

1.1 About this Document

Welcome to the Thermo Scientific™ AppsLab Library of Analytical Applications. This guide provides a quick reference to help you get started.

1.2 AppsLab Library

AppsLab Library is a fully searchable online repository containing the latest applications from Thermo Fisher Scientific for LC, IC, GC, GC-MS and LC-MS instruments, automated sample prep, bioproduction, discrete analyzers and Mass Spectrometric Immunoassay (MSIA). AppsLab Library allows you to search by column, compound and instrument type, and to view key method parameters and chromatograms. You can also download Thermo Scientific™ Dionex™ Chromeleon™ eWorkflows, which have been created and tested by Thermo Fisher Scientific application scientists, and which can be directly executed in your Thermo Scientific™ Dionex™ Chromeleon Chromatography Data System (CDS). These eWorkflows contain all the information that you need to run, process and report the analysis described in the application.

1.3 Compatibility

AppsLab Library has been tested and is compatible with the following Internet browsers:

- Microsoft™ Internet Explorer™ (version 11)
- Google™ Chrome™ (version 77)
- Mozilla™ Firefox™ (version 69)

2 Getting Started

2.1 Open AppsLab Library

To start AppsLab Library:

1. Open your Internet browser (see Section 1.3 for supported browsers).
2. Enter www.thermofisher.com/appslab to open the welcome page.

2.2 Overview

The AppsLab Library welcome page is laid out as follows:

Figure 1: Welcome page

- **A**: Sign-in and registration area. Sign-in and registration options are available in the upper-right corner of every AppsLab Library page. You can also open Virtual Column Online from here. For more information, see Section 2.3.

  Note: General searches can be completed in AppsLab Library without a user account. However, a user account provides you with full access to all content as well as additional functions.

- **B**: Search area for application methods. For more information, see Section 3.
- **C**: List of the most recently added applications. For more information, see Section 3.1.

- **D**: Follow Thermo Fisher Scientific.
  - The social media icons at the bottom of the welcome page allow you to follow Thermo Fisher Scientific on Facebook, Google+, LinkedIn and Twitter.
  - The RSS feed option allows you to subscribe to an RSS feed for all newly added applications or applications from a field of your interest.

2.3 Register and Sign In

AppsLab Library includes Thermo Scientific chromatography and MS applications as well as additional information and options. Creating an account for AppsLab Library and Virtual Column Online provides you with full access to the available content in AppsLab Library and allows you to perform the following actions:

- Download Chromeleon eWorkflows and application note PDF files attached to an application (see Sections 5.3.7 and 5.2.6)
- Create a parts list of columns and consumables for an application (see Section 5.3.8)
- Create a PDF document of the application (see Section 5.3.9)
- Rate and comment on applications, ask the expert, and suggest applications (see Sections 5.3.2, 5.2.7, 5.3.3, and 5.3.4)

The account also allows you to access Virtual Column Online. Virtual Column Online is a web-based tool for simulating ion chromatography analyses. Based on known retention data acquired by Thermo Fisher Scientific as well as IC-specific retention algorithms, Virtual Column Online enables users to model the expected behavior of isocratic and linear gradient separations for a variety of parameter and equipment combinations.

2.3.1 Register

To register for an account, proceed as follows:

1. Click the **Sign In** drop-down list in the upper right corner of the AppsLab Library page and select **Register**.
2. Enter your details on the registration page that is shown.
3. Click **Register**.

After you have completed registration, you will receive a confirmation email. Click on the link in the email to access a confirmation page where you can activate your account and sign in to AppsLab Library and Virtual Column Online.

If you try to log on to AppsLab Library before activating your account, a corresponding error message is shown:

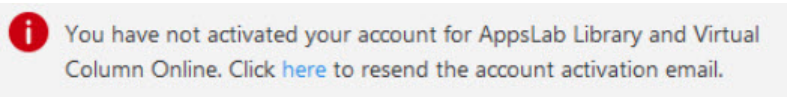


Figure 2: Resend confirmation email

If you have not received the confirmation email or you no longer have it, you can resend it to the email address associated with your account by clicking on the link provided in the error message.

2.3.2 Sign In

To sign in with your password

1. Click **Sign In** in the upper right corner of the AppsLab Library page.

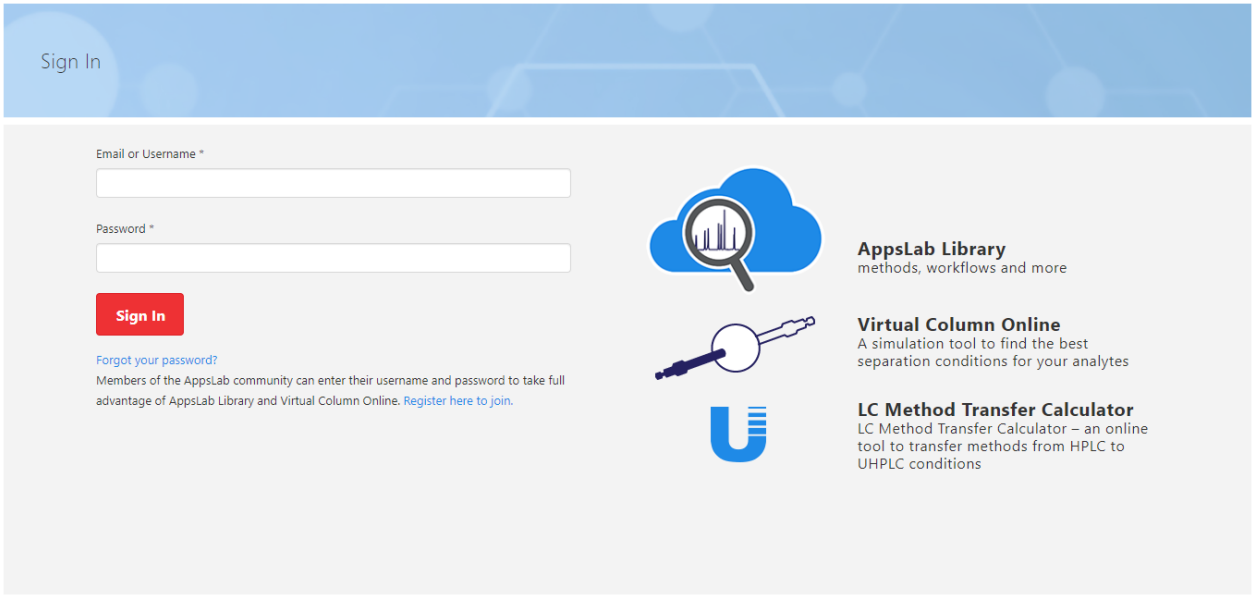


Figure 3: "Sign In" page

2. Enter your **Email** or **Username** and your **Password** on the **Sign In** page.
3. Click **Sign In**.

You are now signed in and directed to the AppsLab Library overview page. When signed in, you will automatically be signed out after twenty minutes of inactivity.

To reset your password if you have forgotten it

1. Click **Forgot your password?** beneath the **Sign In** button.
2. On the **Reset Password** page, enter your email address and click **Continue**.
3. Answer the security question that you defined during registration. Alternatively, click **Continue** if you did not define a security question.

You will receive an email that enables you to reset your password.

Note: You can change your password at any time by clicking the **My Account** drop-down list in the upper right corner of the AppsLab Library page and selecting **Change Password** (see Section 2.4.2).

2.4 Account Settings

2.4.1 Edit Your Account Settings

Once you have signed in to AppsLab Library, you can edit the user profile stored with your user account.

1. Click **My Account** in the upper right corner of the AppsLab Library page.

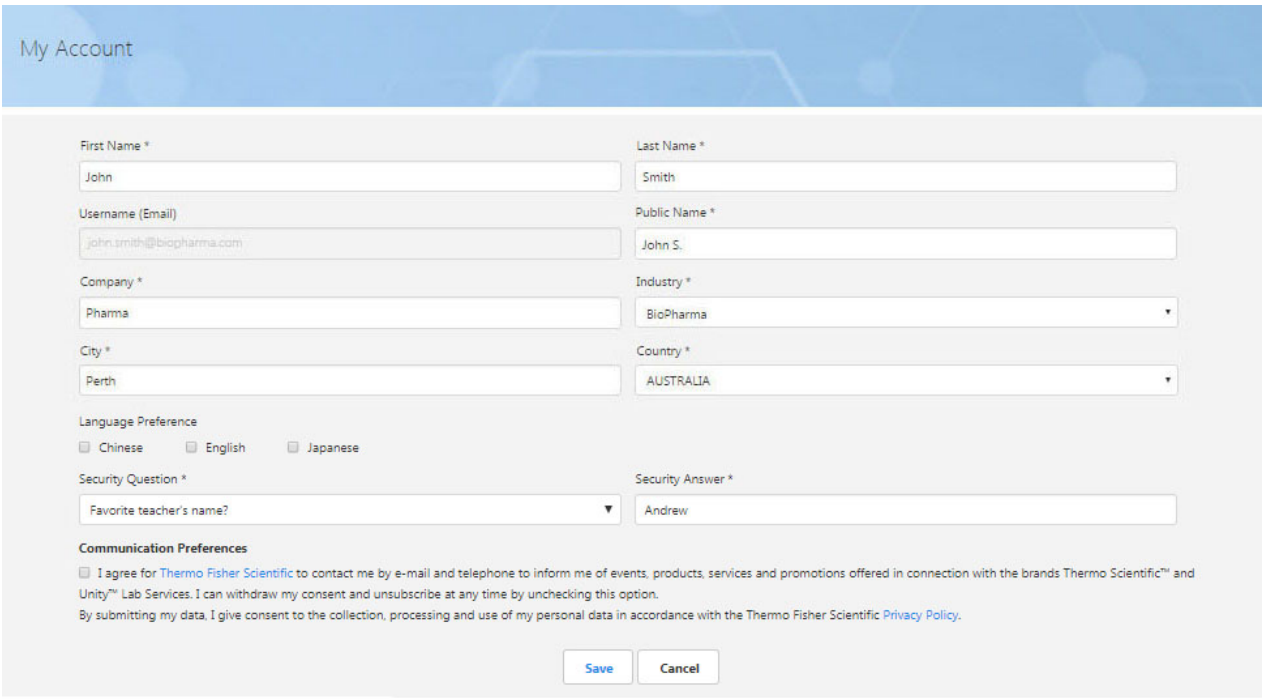


Figure 4: "My Account" page

2. On the **My Account** page, you can perform the following actions:
   - Edit your contact details (name, address, company and industry).
   - Edit the **Public Name** displayed with your ratings and comments on applications. By default, the public name consists of your first name and the initial letter of your last name. You can change the public name to any other name of your choice.
   - Edit the **Language Preference** to display applications in your preferred languages only. By default, no language is selected and you will see applications in all languages.
   - Define a security question to confirm your identity should you forget your password.
   - **Communication Preferences**: Select whether you wish to receive information regarding relevant Thermo Scientific applications.

2.4.2 Change Your Password

To change your password after it has been set:

1. Click the **My Account** drop-down list in the upper right corner of the AppsLab Library page.
2. Select **Change Password**.
3. On the **Change Password** page, enter the current password and the new password in the corresponding fields.
4. Press **Save** to confirm the new password.

2.5 User Documentation

User documentation to help you start working productively with AppsLab Library is provided on the AppsLab website.

1. Sign in to AppsLab Library at https://appslab.thermofisher.com/
2. Click **Getting Started** in the upper right corner of the AppsLab Library page.

Currently the following documentation is available:

- *Getting Started Guide for AppsLab Library*
- *Getting Started Guide for Virtual Column Online*
- *Chromeleon eWorkflows User Guide*

3 Find Application Methods

3.1 Access Recently Added Applications

The four most recently added applications are highlighted on the welcome page. To access any of these applications, click on the corresponding application title or chromatogram image. The highlighted applications depend on your status (registered or unregistered) and your account settings (see Section 2.4).

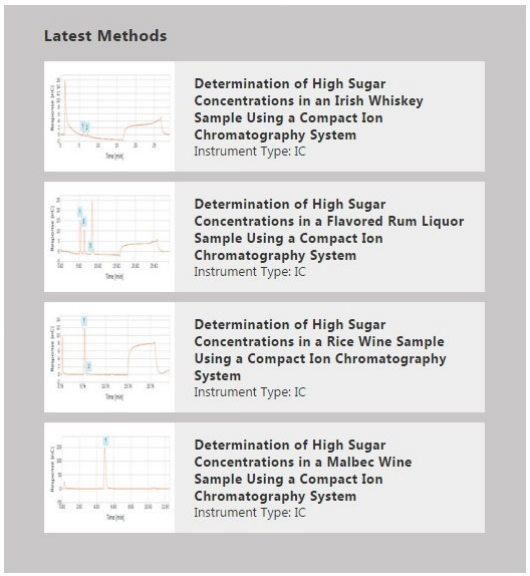


Figure 5: Recently added applications

For registered users:

- You will see the most recent applications for the **Industry** you selected during the registration process (see Section 2.3).
- If you selected a specific **Language** or several languages, you will see the most recent applications in the selected language(s) and for your selected industry.
- If no **Language** is selected, you will see the most recent applications for all languages and for your selected industry.

Note: The selected languages and industry can be modified subsequently if required in your account settings (see Section 2.4).

For unregistered users:

- You will see the four most recently added applications for all industries and all languages.

Note: For more information about reviewing the selected application, see Section 5.

3.2 Search Applications

Follow the steps below to find an application:

1. Enter keyword(s) for the application in the search box, for example a compound, matrix, instrument type, or CAS number. You can also search for a specific author.

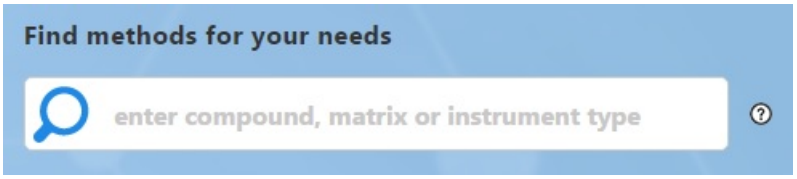


Figure 6: Search box

2. Click on the magnifying glass to start the search.

The AppsLab Library search results page presents a list of applications that fit your search criteria. You can narrow down the list of search results using the **Refine by Feature** filters provided on the left (see Section 4.2) or show the details of an application by clicking on the corresponding application title or chromatogram image (see Section 5).

3.2.1 Advanced Search

It is also possible to search using Boolean operators, such as AND, OR, and NOT, as well as quotation marks:

- Several keywords are connected by **AND**. A search for *amino acid* will retrieve all applications that contain both the word “amino” and the word “acid”.
- Use **OR** to specify individual keywords, of which at least one must be included in your search results. A search for *amino OR acid* will retrieve all applications that contain the word “amino”, the word “acid” or both.
- Use **NOT** to exclude a word or phrase from your search result. A search for *serum NOT “amino acid”* will retrieve all applications with the word “serum”, but not containing the phrase “amino acid”.
- Use quotation marks to specify an exact word or phrase that must be included in your search result. A search for *“amino acid”* will retrieve all applications that contain the exact phrase “amino acid”.

Note: The advanced search options are also displayed when clicking on the circled question mark next to the search box.

4 Manage Search Results

4.1 Search Results View

After performing a search, a list of all applications matching the search keywords is shown.

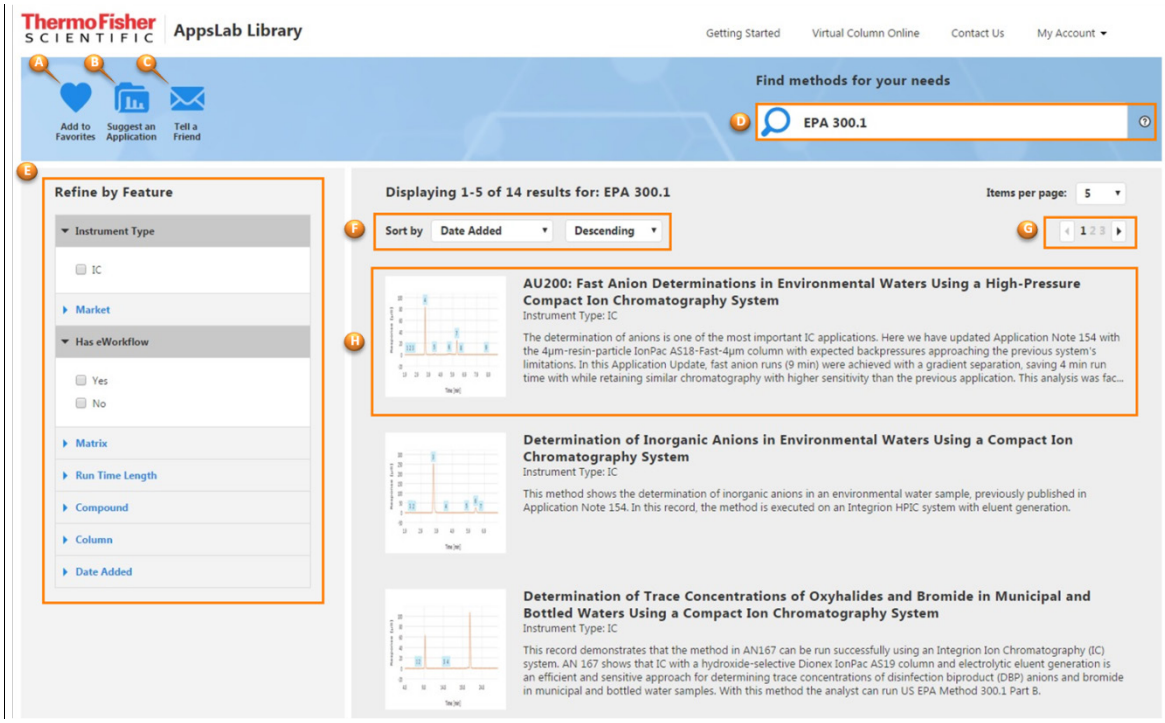


Figure 7: Search results

- **A**: You can save the search for future use using the **Add to Favorites** icon provided at the top left of the page (see Section 5.3.5).
- **B**: You can suggest an application that you feel should be included in AppsLab Library (see Section 5.3.4).
- **C**: You can share favorites with friends or colleagues by emailing them the URL of a favorite search or application (see Section 5.3.6).
- **D**: You can modify the search or trigger a new application search by editing the keywords you have entered in the search box and clicking on the magnifying glass. The search results will be updated.
- **E**: You can narrow down the list of search results using the **Refine by Feature** filters provided beside the list on the left (see Section 4.2).
- **F**: You can sort the search results based on predefined criteria.
- **G**: You can scroll through the search results using the arrow buttons provided above the list on the right.
- **H**: You can show the details of an application by clicking on the corresponding application title or image (see Section 5).

Note: The default search result setting shows 5 applications per page. It is possible to change this to a higher number (10, 15, 20, 25, or 50) using the **Items per page** drop-down list.

4.2 Refine Results by Feature

Application search results can be filtered using the **Refine by Feature** panel on the left. The following filters are provided:

- **Instrument Type**: You can choose from a variety of instrument types, such as IC, LC and GC instruments, as well as **Automated Sample Prep**, **Bioproduction**, **Discrete Analyzer** and **Mass Spectrometric Immunoassay** (MSIA).
- **Market**: You can filter the search results to show applications for a particular area such as clinical research or material science.
- **Has eWorkflow**: You can restrict the search results to include only those applications for which an eWorkflow is available.
- **Matrix**: You can limit the search results to applications that use a selected matrix.
- **Run Time Length**: You can enter your preferred run time length (**From** … **To**) in the fields provided.

Note: If you are searching for an **Automated Sample Prep** application, **Run Time Length** is not a valid filter criterion.

- **Compound**: You can choose from a variety of compound names, compound classes and CAS numbers.
- **Column**: You can select columns from various manufacturers, as well as a variety of column models, stationary phases and dimensions.

Note: The **Dimensions** parameters offered by the **Column** filter are based on varying units of measure:

- **Length**: Filters your search based on the length of IC and LC columns in millimeters (mm) and of GC columns in meters (m).
- **Diameter/Tubing Size ID**: Filters your search based on the diameter of IC and LC columns in millimeters (mm), on the inner diameter of GC columns in millimeters (mm), and on the tubing size inner diameter of GC packed columns in millimeters (mm) or inches (in).
- **Tubing Size OD**: Filters your search based on the tubing size outer diameter of GC packed columns in millimeters (mm) or inches (in).
- **Particle Size/Film Thickness**: Filters your search based on the particle size of IC and LC columns and on the film thickness of GC columns in µm. Note that this parameter is not applicable if the **Monolith** checkbox is selected.

The values for these parameters are entered manually.

- **Date Added**: You can select an interval (**From** … **To**) using the date picker provided.

4.3 Sort Search Results

Figure 8: Sort search results (example: “Date Added”)

You can sort search results based on the following criteria in ascending or descending order:

- **Date Added**
- **Instrument Type**
- **Rating**
- **Run Time**
- **Title**

4.4 Share Search Results

You can share search results with other users via social media. The social media buttons for sharing are shown to the left of the displayed search results.

5 Application Details

5.1 Application View

When you click on an application in the search results list or in the list of recently added applications, an application view is displayed that contains the details of the selected application as well as additional options that may vary depending on the selected application.

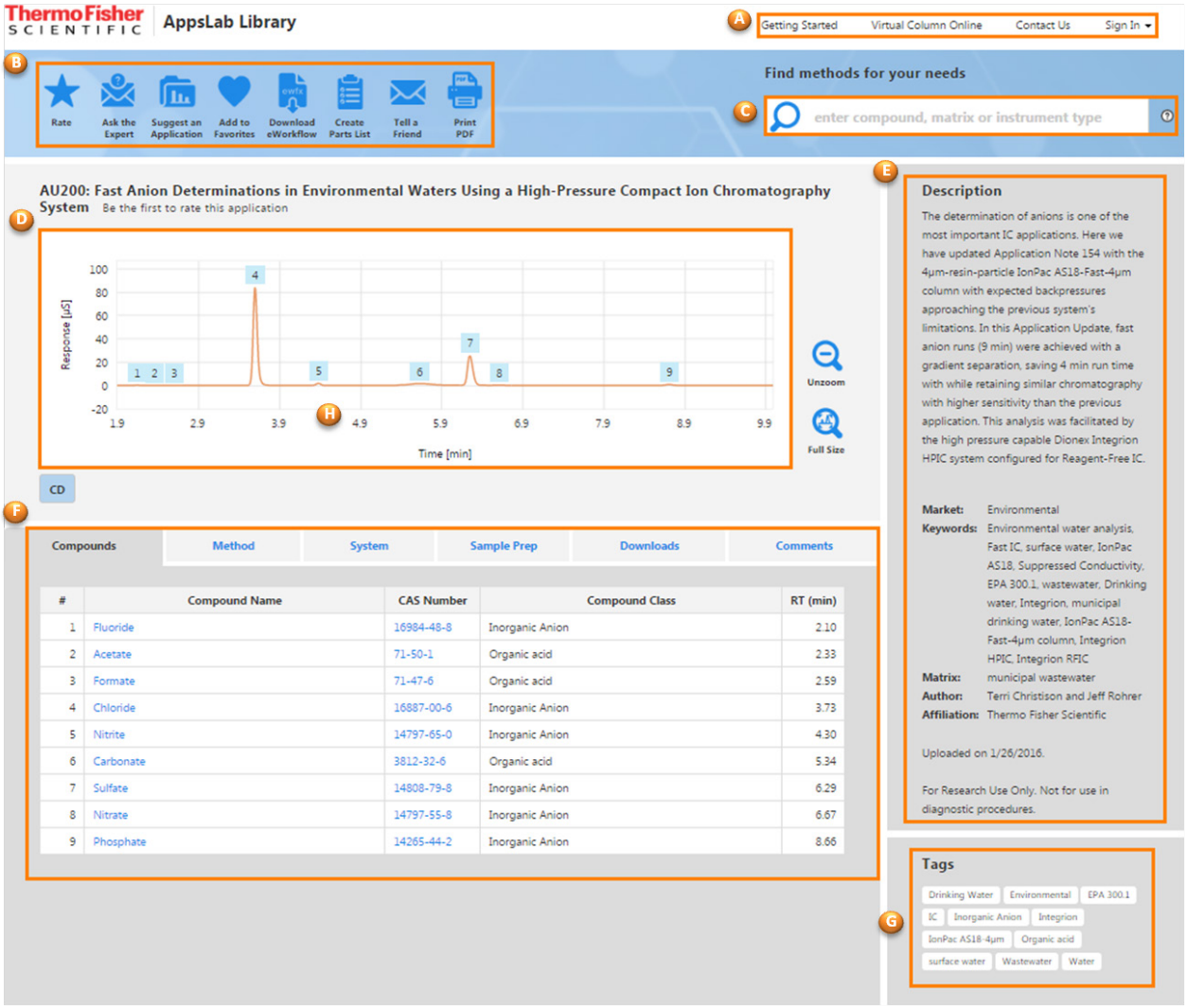


Figure 9: Application view

The application view consists of the following areas:

- **A**: AppsLab Library page header. Includes the **Sign In** and **Register** options, see Section 2.3.
- **B**: Application icons. A number of application icons are provided at the top of the page that can vary depending on the content of the selected application.

> **Note**: You must be signed in to AppsLab Library to use the icons provided. For further information, see Section 5.3.

- **C**: Search area. See Section 3.

- **D**: Chromatogram:

  Some applications show a chromatogram. This is typically a zoomed-in chromatogram plot.

  - You can zoom further into the chromatogram using the mouse.
  - Click **Unzoom** to restore the chromatogram to its default view.
  - Click **Full Size** to unzoom the chromatogram to its full extent, showing the x-axis from 0 to the end of the run time.
  - If the chromatogram contains multiple channels, this is indicated by multiple labels beneath the chromatogram.

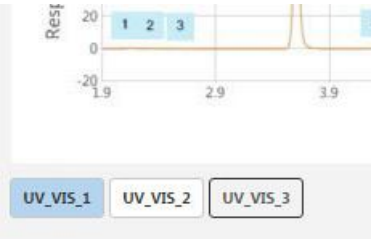


Figure 10: Multiple chromatogram channels

  - Clicking on a label for another channel displays the chromatogram for that channel as well as the corresponding compound table (see Section 5.2.1).

Note: Not all applications include an interactive plot. In this case, an image of the chromatogram or a market-related image is shown.

- **E**: **Description** area

  The content of the selected application is described here. Relevant keywords, the market, the matrix, and the status of the application, for example, are also specified.

Note: "Proof of Concept" Status

Applications that are marked "Proof of Concept" have not been rigorously tested. Although we do not anticipate problems with these methods, typically they have not been tested for ruggedness, challenged with numerous samples, or fully optimized for any of several performance parameters (for example, run time, resolution).

- **F**: Application tabs that provide all the information required to run this application. There can be up to six tabs:
  - **Compounds**, see Section 5.2.1 – OR – **Results**, see Section 5.2.2
  - **Method**, see Section 5.2.3
  - **System**, see Section 5.2.4
  - **Sample Prep** (optional), see Section 5.2.5
  - **Downloads**, see Section 5.2.6
  - **Comments**, see Section 5.2.7

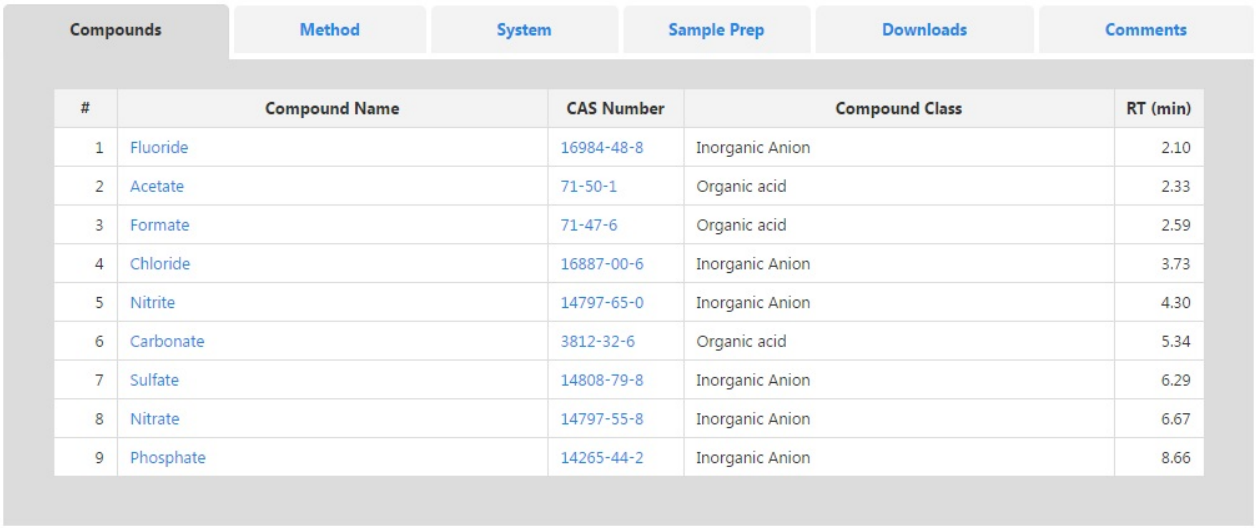
- **G**: **Tags** area

  A list of tags is shown to the right of the screen. Clicking on a tag displays all applications that have been assigned this tag.

5.2 Tab Pages

5.2.1 Compounds

The **Compounds** tab contains a table that lists the compounds for the selected application.



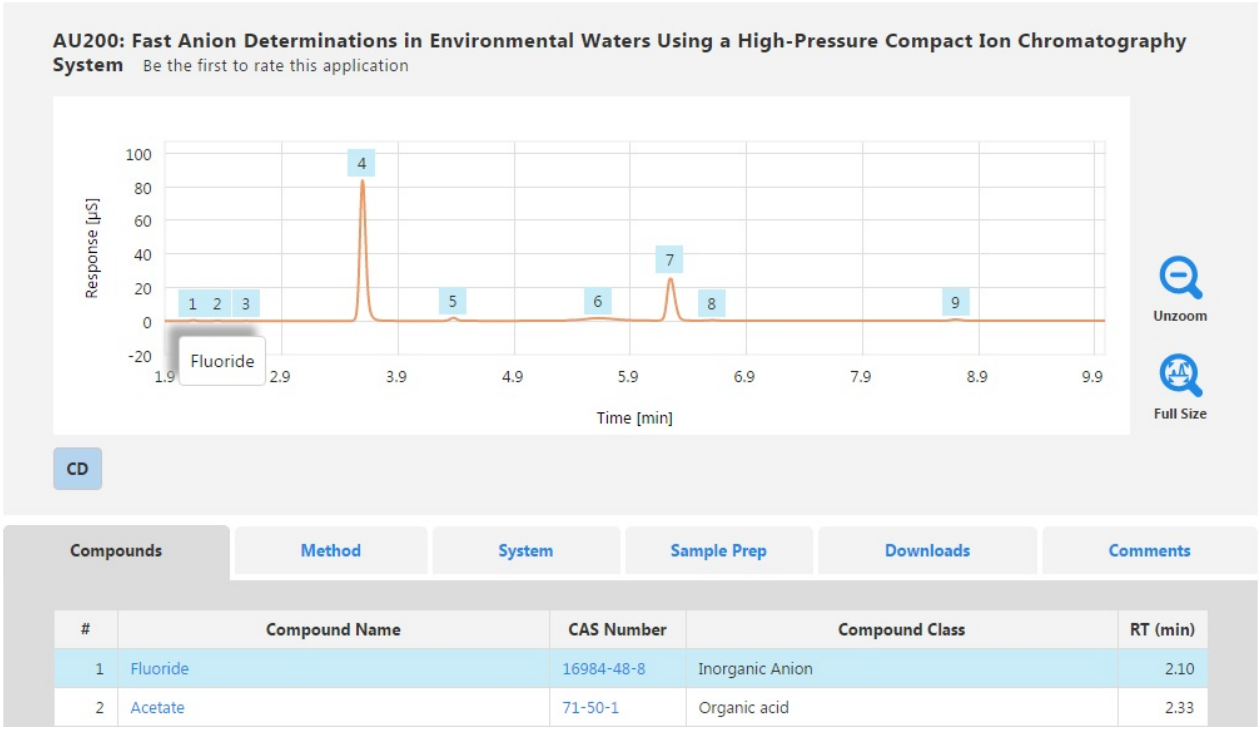
Compounds | Method | System | Sample Prep | Downloads | Comments

#	Compound Name	CAS Number	Compound Class	RT (min)
1	Fluoride	16984-48-8	Inorganic Anion	2.10
2	Acetate	71-50-1	Organic acid	2.33
3	Formate	71-47-6	Organic acid	2.59
4	Chloride	16887-00-6	Inorganic Anion	3.73
5	Nitrite	14797-65-0	Inorganic Anion	4.30
6	Carbonate	3812-32-6	Organic acid	5.34
7	Sulfate	14808-79-8	Inorganic Anion	6.29
8	Nitrate	14797-55-8	Inorganic Anion	6.67
9	Phosphate	14265-44-2	Inorganic Anion	8.66

Figure 11: “Compounds” tab

Note: If the application is for an MS instrument, columns may also be provided for **Exact Mass (m/z)**, **Mass Accuracy (ppm)**, **LOD**, and **LOQ**.

If the application includes a chromatogram plot, the compounds listed in the table are also indicated by a corresponding number in the chromatogram plot.



#	Compound Name	CAS Number	Compound Class	RT (min)
1	Fluoride	16984-48-8	Inorganic Anion	2.10
2	Acetate	71-50-1	Organic acid	2.33

Figure 12: Compound labels

Hovering the mouse over a peak label will display the compound name on the chromatogram. The corresponding row in the compound table is also highlighted.

To open a new tab with a list of other applications that include a particular compound (or CAS number, if available), click on the compound name (or CAS number) in the compound table.

5.2.2 Results

For some application types, a **Results** tab is shown instead of the **Compounds** tab.

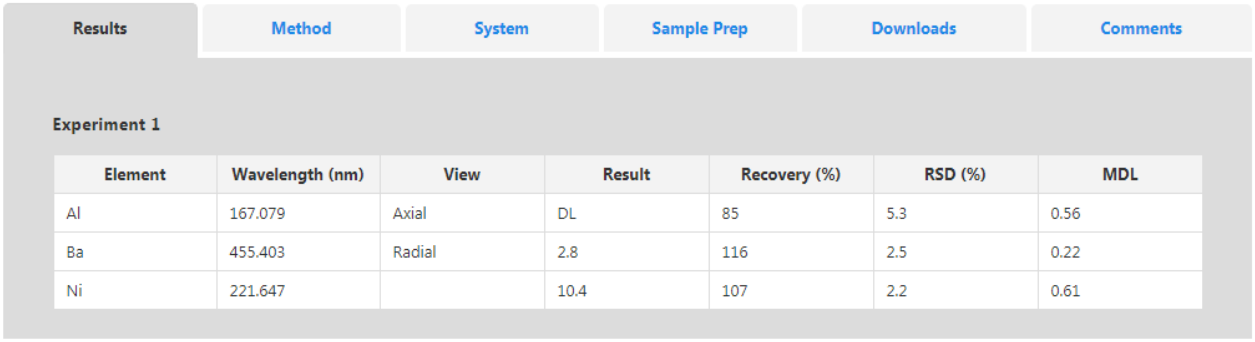


Figure 13: “Results” tab

5.2.3 Method

The **Method** tab shows the instrument parameters required to run the application.

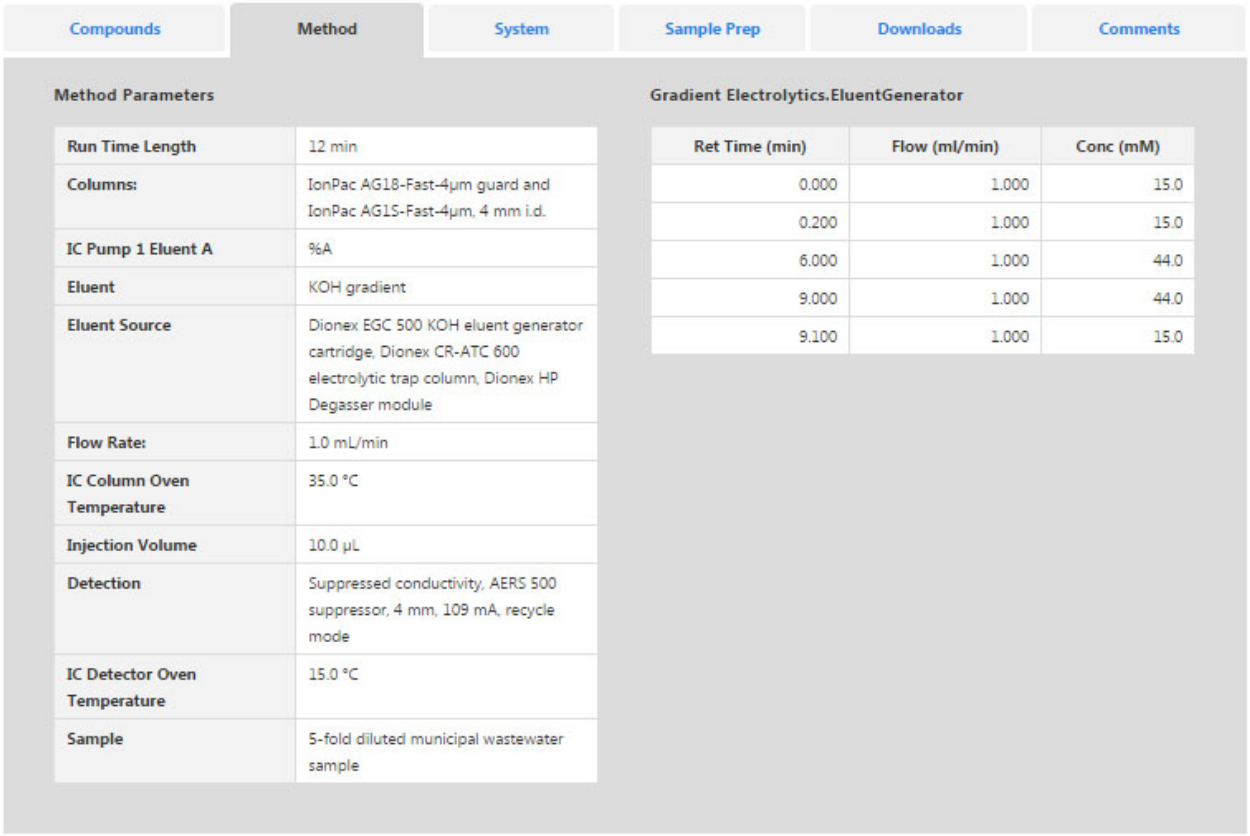


Figure 14: Method parameters

5.2.4 System

The **System** tab lists systems, columns and consumables used for this application.

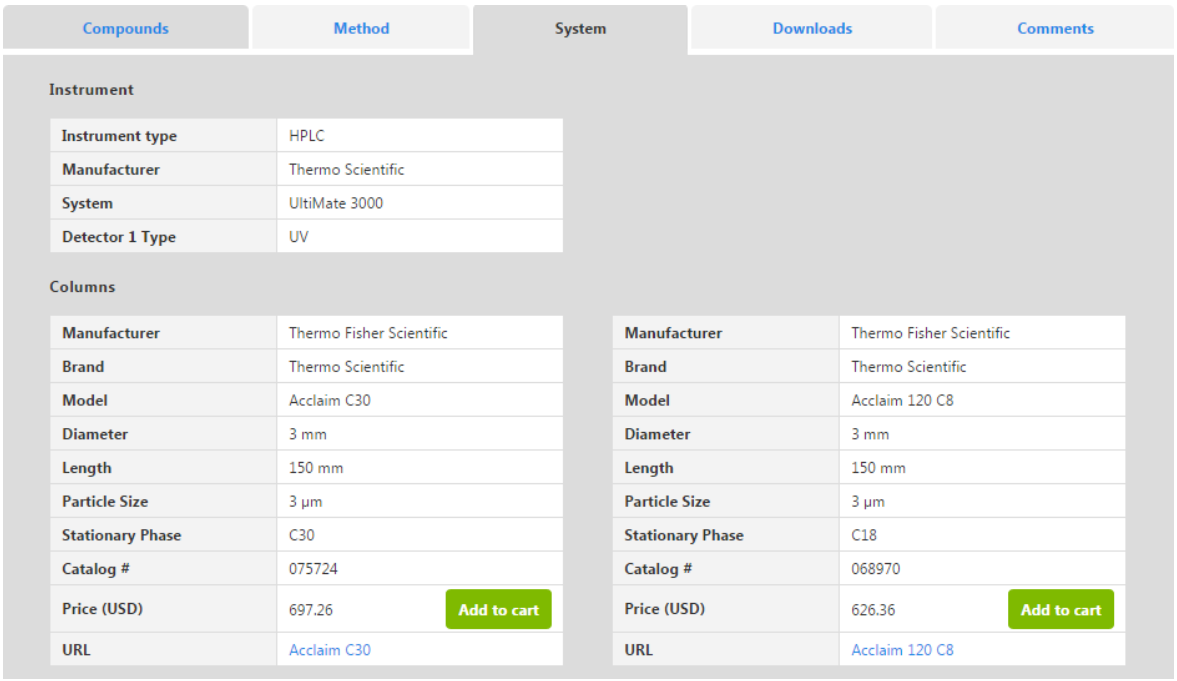


Figure 15: System, columns and consumables

Note: If you have signed in to AppsLab Library, you can use the **Create Parts List** icon (see Section 5.3) to generate a text document listing the relevant columns, consumables and instrument modules, as well as their respective catalog numbers. Sample preparation systems and related consumables will also be included if available.

eCommerce

Note: eCommerce is currently only available in the United States and Canada.

A number of columns and consumables can be ordered in Thermo Fisher Scientific eCommerce. These items can be added to a shopping cart in AppsLab using the **Add to cart** option. Added items can be viewed later in the AppsLab shopping cart by clicking on the top right of the screen. The content of this shopping cart can then be transferred to the Thermo Fisher Scientific website to finalize an order.

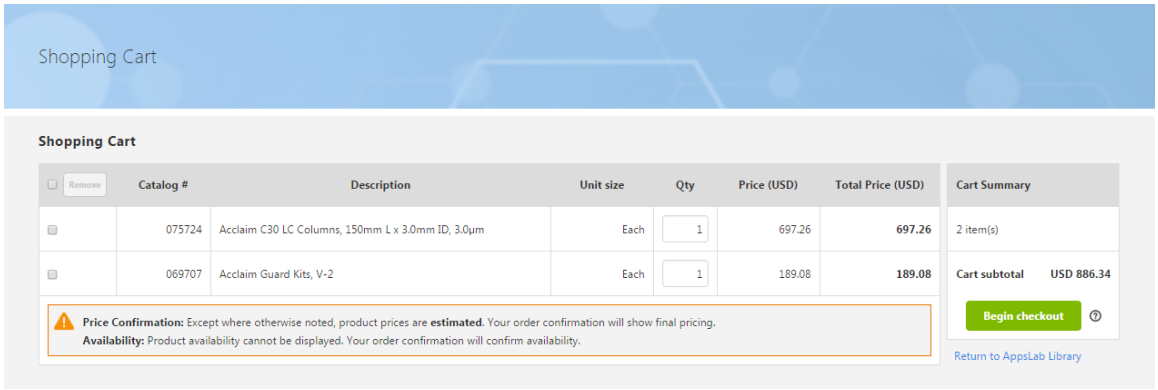


Figure 16: Shopping cart

Note: In addition to an AppsLab account, you also need an account with Thermo Fisher Scientific to place an order.

5.2.5 Sample Prep

If sample preparation information is available for the selected application, the **Sample Prep** tab provides information on sample prep systems, method parameters, consumables and/or sample preparation steps.

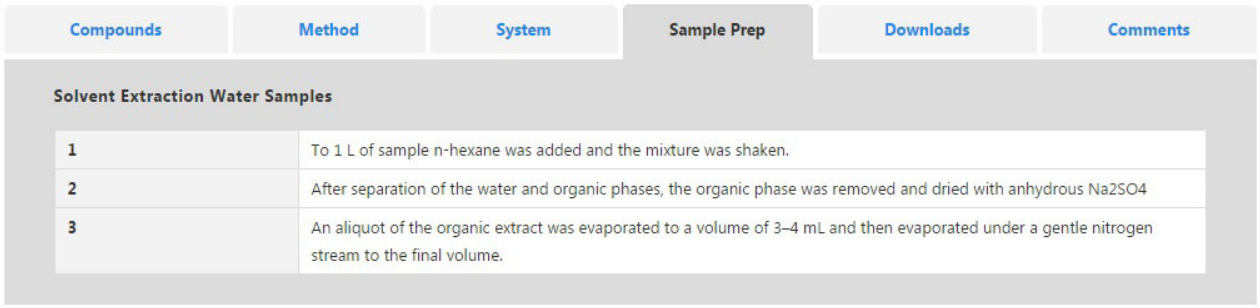


Figure 17: Details on sample preparation

Note: If you have signed in to AppsLab Library, you can use the **Create Parts List** icon (see Section 5.3) to generate a text document listing the relevant columns, consumables and instrument modules, as well as their respective catalog numbers. Sample preparation systems and related consumables will also be included if available.

5.2.6 Downloads

The **Downloads** tab allows you to download files related to the application, for example, Chromeleon eWorkflows or application note PDF files.

Figure 18: Downloadable files and web links

- Click to open a preview of the file. This is only available for PDF files.
- Click to download the file.

- If web links are available, they are shown beneath the list of downloadable files.

Note: You can only download files and preview PDF files when you are signed in to AppsLab Library with a valid AppsLab Library account. The download time of a file depends on the file size (up to 3 GB are supported).

5.2.7 Comments

The **Comments** tab provides an overview of all ratings and comments entered for the selected application.

Figure 19: Application comments

You can respond to an existing comment using the **Reply** option provided to the right:

1. Click to open the **Reply** dialog box.
2. Enter your comment in the **Comment** field.
3. Click **Reply** to submit your response.

The overall rating for an application is shown below the title of the application at the top of the page.

Note: You can also enter your own comments and rate an application yourself using the **Rate** icon, see Section 5.3.2.

5.3 Application Icons

5.3.1 Overview

A number of application icons are provided at the top left of the page that can vary depending on the selected application.

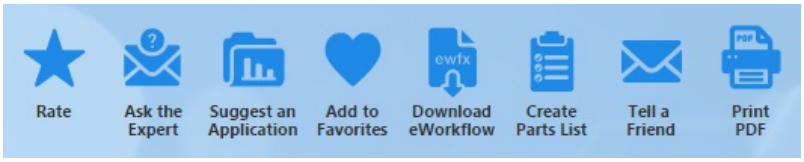


Figure 20: Application icons

These icons enable you to make use of the information provided, e.g. by bookmarking an application as a favorite or generating a parts list. You can also provide feedback, e.g. by rating the application, ask an expert for further information, or suggest applications that you feel may be of interest to other users.

5.3.2 Rate an Application

You can use the **Rate** icon to rate an application and/or to comment on it.

1. Select the relevant application.
2. Click to open the **Rate** dialog box.

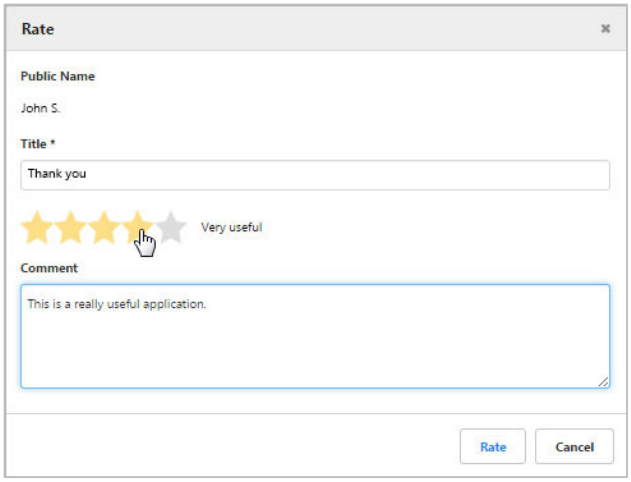


Figure 21: "Rate" dialog box

3. To enter a comment and rate the selected application:
   - Enter a name for your comment in the **Title** field (this is a mandatory field).
   - Enter your comment in the **Comment** field.
   - Click on the appropriate star to rate the application.
4. Click **Rate** to submit your entries.

Note: The **Public Name** shown in the dialog is defined in your account settings (see Section 2.4.1) and is visible to other users together with your rating/comment. Your rating/comment is normally visible immediately, unless its content is considered in breach of generally accepted rules for online discussions.

5.3.3 Ask the Expert

The **Ask the Expert** icon allows you to ask questions regarding an application.

Note: Your questions will not be visible to other users.

1. Select the relevant application.
2. Click to open the **Ask the Expert** dialog box.

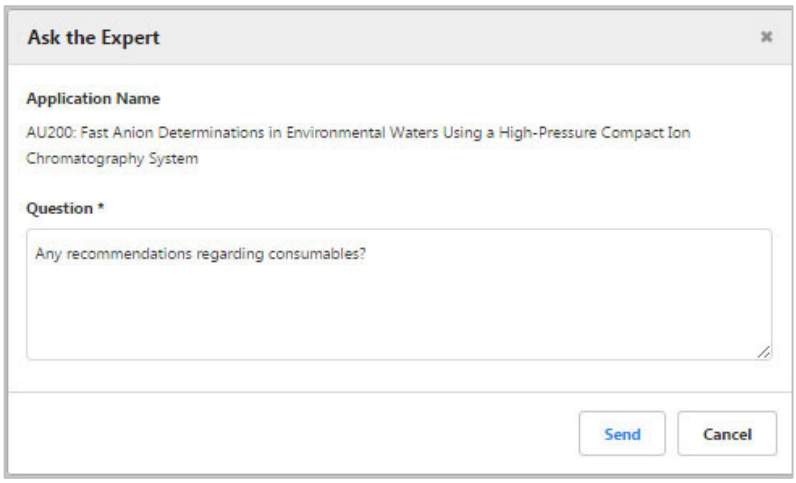


Figure 22: "Ask the Expert" dialog box

3. Enter your question in the **Question** field. The **Application Name** is predefined based on the selected application.
4. Click **Send**.

You will receive a reply as soon as possible.

5.3.4 Suggest an Application

The **Suggest an Application** icon allows you to submit a suggestion for a new application.

1. Click to open the **Suggest an Application** dialog box.

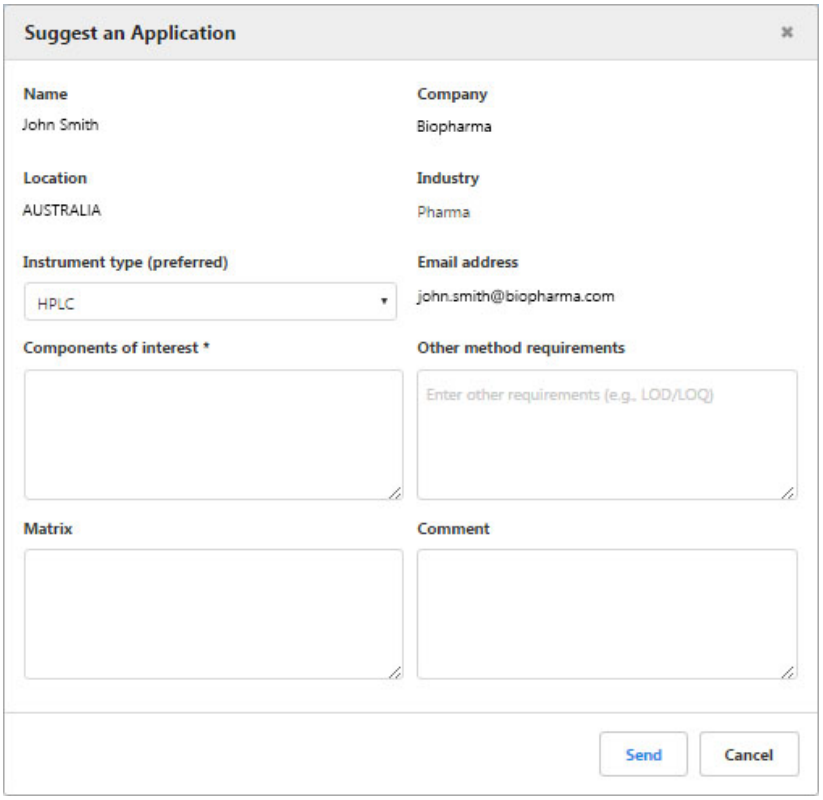


Figure 23: "Suggest an Application" dialog box

2. Enter the following information:
   - **Instrument type (preferred)**
   - **Components of interest**
   - **Other method requirements**, e.g., LOD/LOQ
   - **Matrix**
   - **Comment**

Note: The **Name**, **Company**, **Location**, **Industry**, and **Email address** fields are automatically filled based on the information provided in your user profile.

3. Click **Send**.

Your suggestion will be reviewed and considered for future applications.

5.3.5 Add to Favorites

The **Add to Favorites** icon allows you to save the current search results (if you are in the search result area) or the currently selected application to your favorites for future use.

To add favorites

1. Click to open the **Add to Favorites** dialog box.

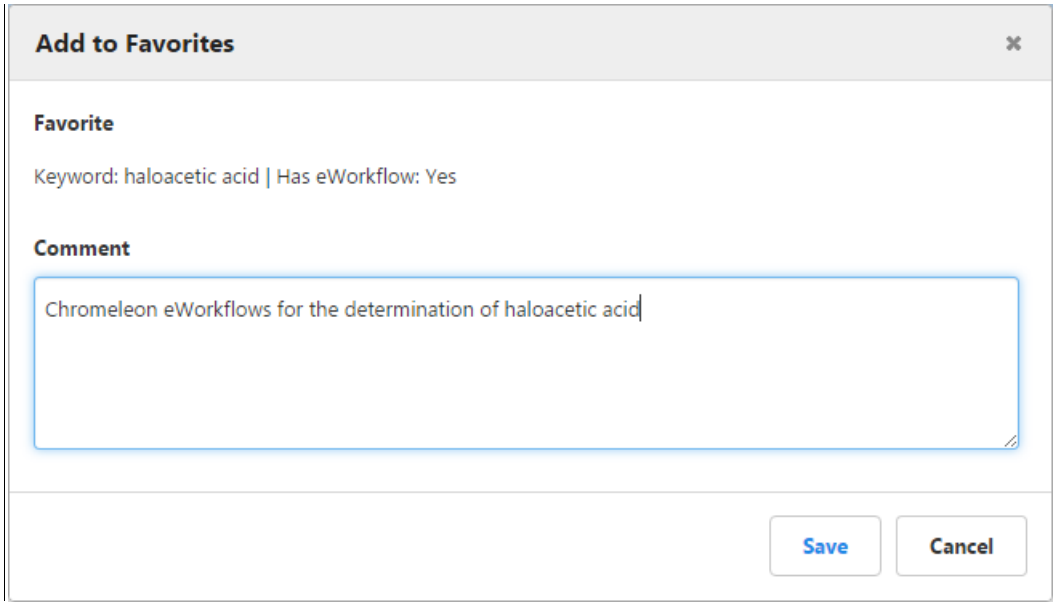


Figure 24: “Add to Favorites” dialog box (example: keyword search)

2. Add an explanatory **Comment** (optional) and click **Save**.

To open saved searches and applications

1. Click the **My Account** drop-down list in the upper right corner of the AppsLab Library page.
2. Select **Favorites**.

Your favorite searches and applications are displayed separately on the **Favorites** page:

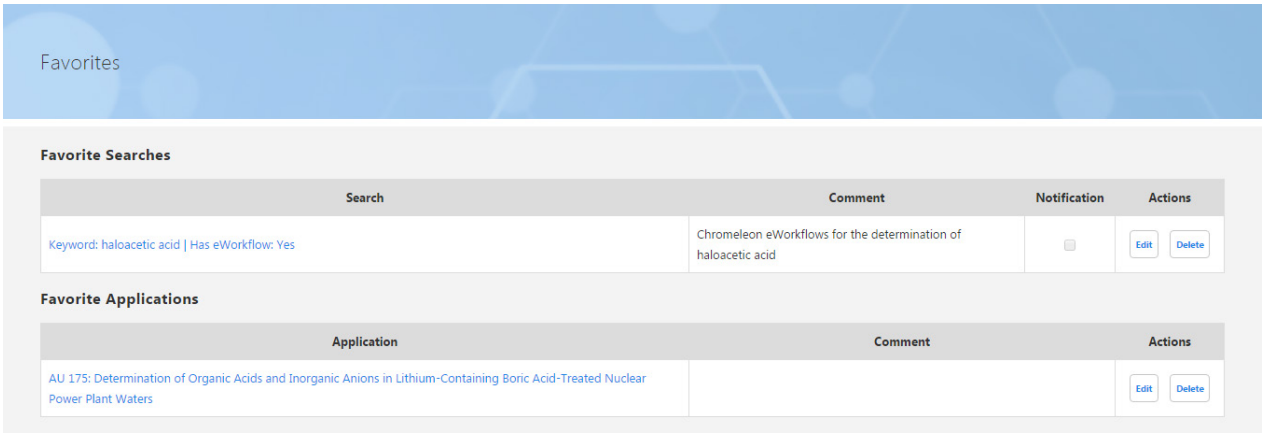


Figure 25: “Favorites” page

3. In the **Search** or **Application** column, click the desired keyword search or application to open it.

Note: Opening a favorite search will display the current search results.

To stay updated on a favorite search

1. Click the **Edit** button beside the relevant favorite search.

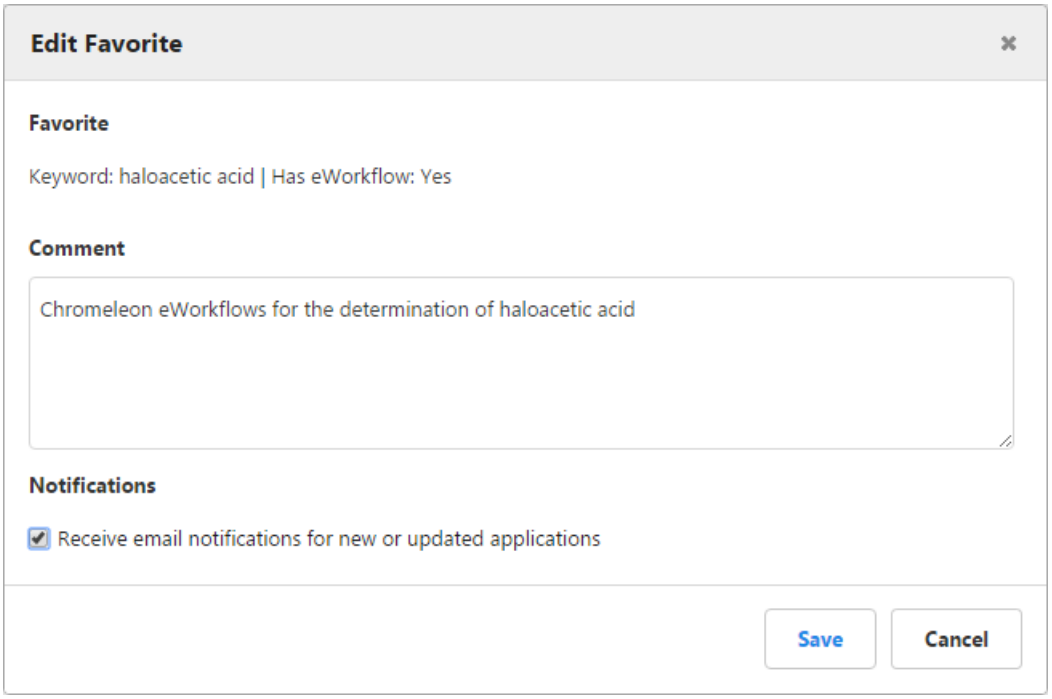


Figure 26: “Edit Favorite” dialog box

2. In the **Edit Favorite** dialog box, activate the check box **Receive email notifications for new or updated applications**.
3. Click **Save**.

The **Notification** check box beside the selected favorite search is now activated and you will be notified via email of any new or updated applications that match your search.

5.3.6 Tell a Friend

You can also share favorites with friends or colleagues by emailing them the URL of a favorite search or application.

1. Click to open the **Tell a Friend** dialog box.

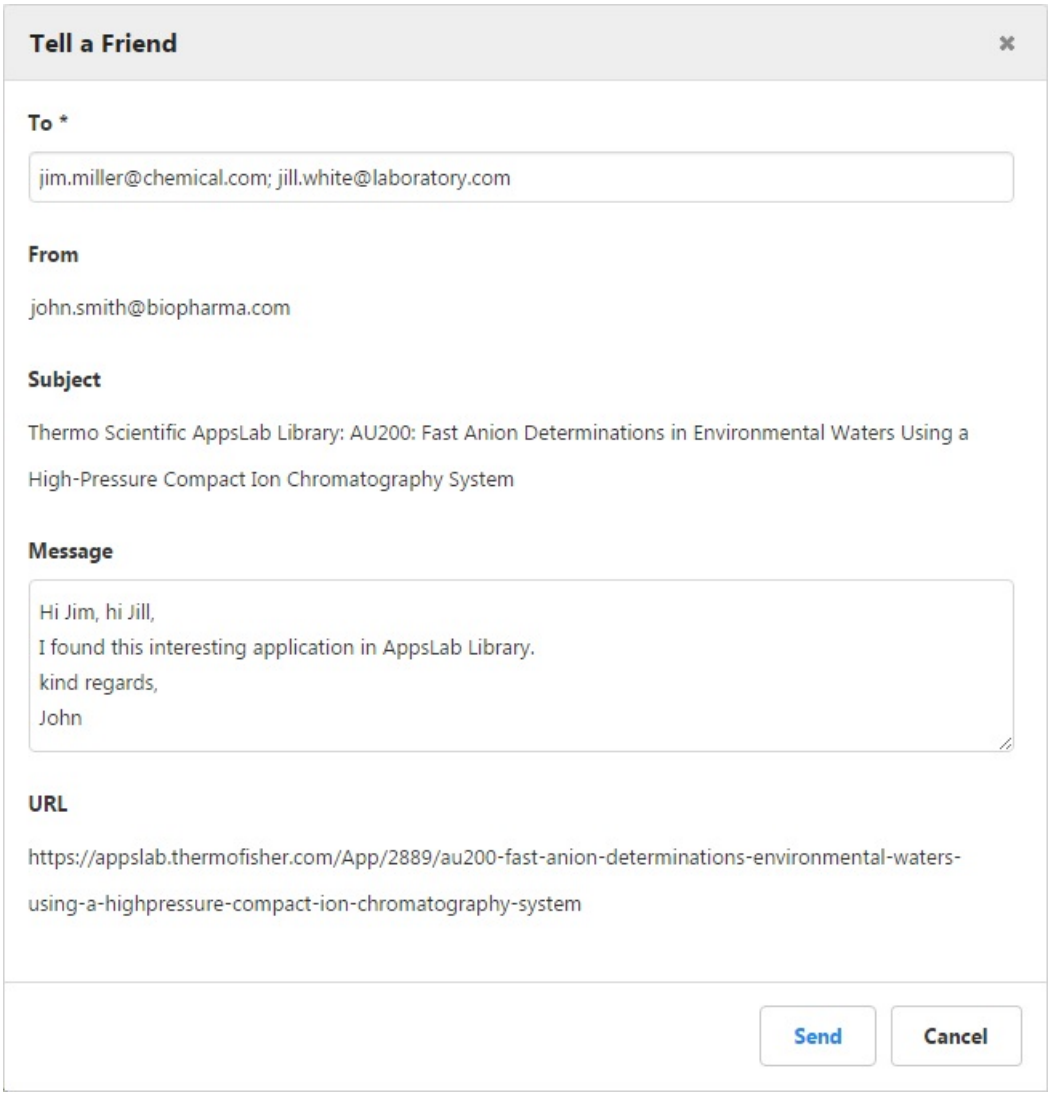


Figure 27: “Tell a Friend“ dialog box

2. Enter the email address of the recipient. You can add multiple email addresses separated by semicolons.

3. In the **Message** field, you can add an optional text with up to 600 characters.

4. Click **Send**.

5.3.7 Download eWorkflow

If an eWorkflow is available for the selected application, a **Download eWorkflow** icon is shown that enables direct download of Chromeleon eWorkflows.

1. Click

to download an eWorkflow for the selected application.

- If only one eWorkflow is available for the application, it will be downloaded automatically.
- If multiple eWorkflows are attached to the application, a separate window will open that lists the available downloads.

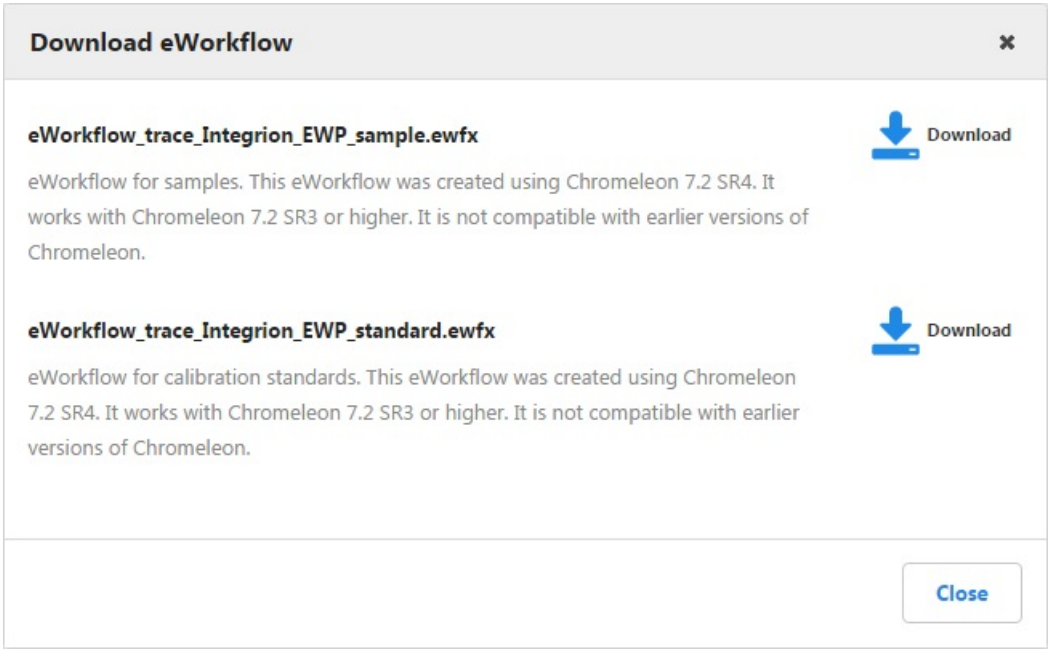


Figure 28: “Download eWorkflow” dialog box

2. Click the **Download** icon next to the eWorkflow that you would like to download.

5.3.8 Create Parts List

The **Create Parts List** icon generates a text document that lists the relevant columns, consumables and instrument modules for the selected application. This parts list also includes information on catalog numbers and manufacturers. Sample preparation systems and related consumables will also be included if available.

1. Click to create a parts list for the selected application.

   The parts list will be downloaded automatically.

Note: The creation of a parts list is only possible when signed in to AppsLab Library with a valid AppsLab Library account.

5.3.9 Print PDF

The **Print PDF** icon allows you to print the information available for the selected application to PDF.

1. Click to generate a PDF for the selected application.

   The PDF will be downloaded automatically.

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