

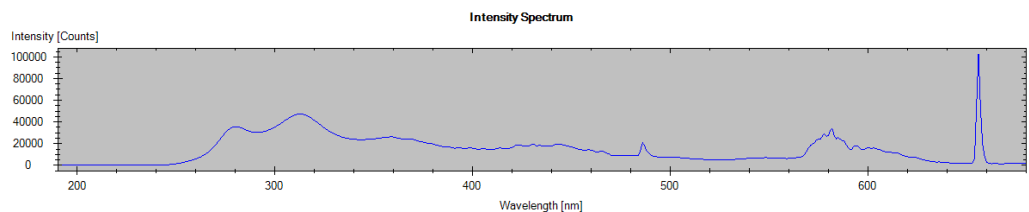
# Agilent 7100 Capillary Electrophoresis System

## Installing the Detector Filter Assembly

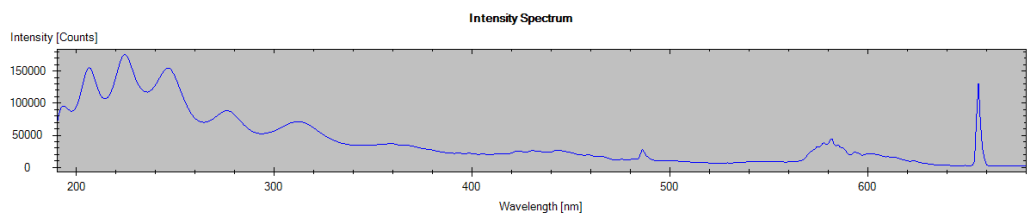
This Technical Note describes the installation and function of the Detector Filter Assembly (G7100-68750) for the 7100 CE detector.

### Overview

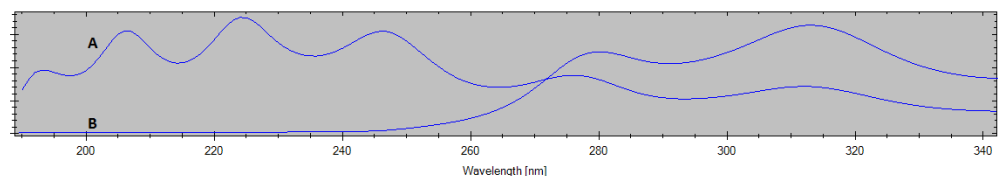
The detector filter G7100-68750 transmits light from a wavelength range starting from around 280 nm on (high pass filter). The purpose of the filter is to detect analytes such as proteins or peptides absorbing in this range while protecting buffer components such as cross linked polyacrylamid gels or other sensitive compounds such as ampholytes from decomposition due to the high energy UV light. Higher performance of cIEF applications was found with the detector filter G7100-68750 installed. [Figure 1](#) on page 1 shows a typical intensity spectrum with an inserted filter recorded with the Lab Advisor **Intensity Test**. For reference, an intensity spectrum that is recorded without any filter is given in [Figure 2](#) on page 1. The transmission of the high pass filter is 50 % at 280 nm. [Figure 3](#) on page 1 shows a comparison of normalized spectra that are recorded with and without a filter.



**Figure 1** Intensity spectrum with inserted 280 nm high pass filter G7100-68750



**Figure 2** Normal intensity spectrum without any filter



**Figure 3** Comparison of Intensity spectrum without (A) and with (B) inserted 280 nm high pass filter G7100-68750, normalized intensity, zoom to 190 – 340 nm

## Installing the Detector Filter

### CAUTION

Fingerprints on optical parts

Fingerprints may lead to baseline drifts and may also increase baseline noise of detector response.

- Do not touch the surface of the filter or any other optical parts.
- Store the filter in the shipping container.

### CAUTION

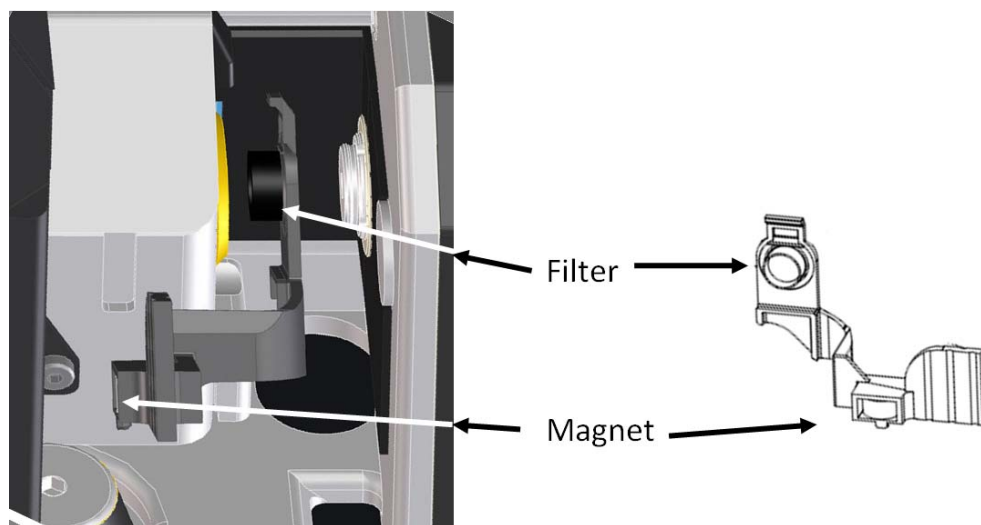
Filter not correctly inserted

The filter element might accidentally block the DAD light path in an awkward angle since the magnet for fixation is attracted by other metal. The filter element might break off the plastic part.

- Carefully avoid torsion onto the filter.

**Prior to installation of the filter, do the following:**

- 1 Lower all lifts using either the ChemStation or Lab Advisor software.
- 2 Open the lid and remove the cassette.
- 3 Insert the filter as shown below.



**Figure 4** Mounting of the detector filter

- 4 Insert the round shaped filter element into the DAD light path. Do this best by holding it horizontally so this first step happens without allowing the magnet to snap toward other metal components.
- 5 By a rotational movement (approximately 20 °), let the magnet clip onto the allen screw, which fixes the detector.

## Checking the Filter Function

### CAUTION

Narrow path for cassette insertion

The path for cassette insertion is now narrower with the filter inserted. Moving the cassette requires attention to avoid damage of the filter.

- Avoid damaging the filter while moving cassettes downward.
- Do not push hard.
- Apply a trajectory with a slight jitter or zigzag.

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**Check the proper function of the filter as follows:**

- 1 Install the green alignment interface (G7100-60210) without any capillary in the cassette.
- 2 Insert the cassette carefully into the instrument. Due to the installed filter, the path for insertion is now narrower and the movement requires special attention.
- 3 Start the Lab Advisor software, connect to the instrument, and select the **Intensity Test** from the **Detector Tests**.
- 4 Execute the **Intensity Test**. Compare characteristic to [Figure 1](#) on page 1.

## Tips and Hints

For capillary isoelectric focusing of proteins a suitable detector setting is:

- Sample wavelength  $280 \pm 10$  nm and Reference  $550 \pm 50$  nm

A sample wavelength below 260 nm is not recommended.

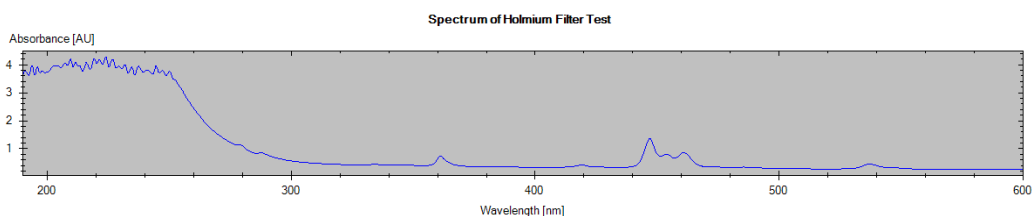
## What can Happen in the Holmium Oxide Test with the Filter Installed?

With the filter installed, the **Holmium Oxide Test** from Lab Advisor might fail.

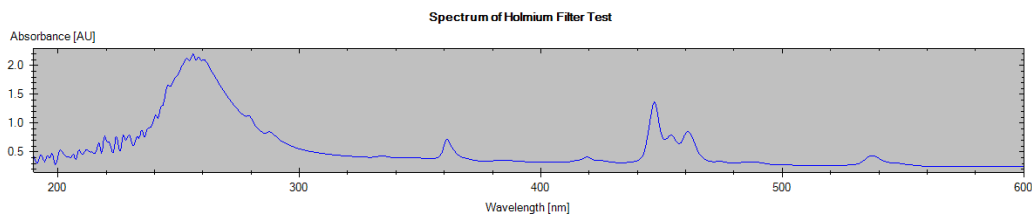
The **Holmium Oxide Test** attempts to find distinct peaks in the holmium oxide spectrum, see [Figure 5](#) on page 4 for a normal holmium oxide spectrum. For this test, a holmium oxide filter which is built into the 7100 CE detector is moved into the light path and allows an independent verification of the wavelength correctness of the instrument. The **Holmium Oxide Test** looks for peaks at 361.0 nm, 418.9 nm, 453.7 nm, and 536.7 nm. With the filter installed the wavelength region 190 – 260 nm is unavailable and this results in noise in this area (see [Figure 6](#) on page 4). The wavelength region with relevant peaks for the **Holmium Oxide Test** is available.

## Tips and Hints

### What Can Happen if You Work in the Low UV Range With the Filter Installed?



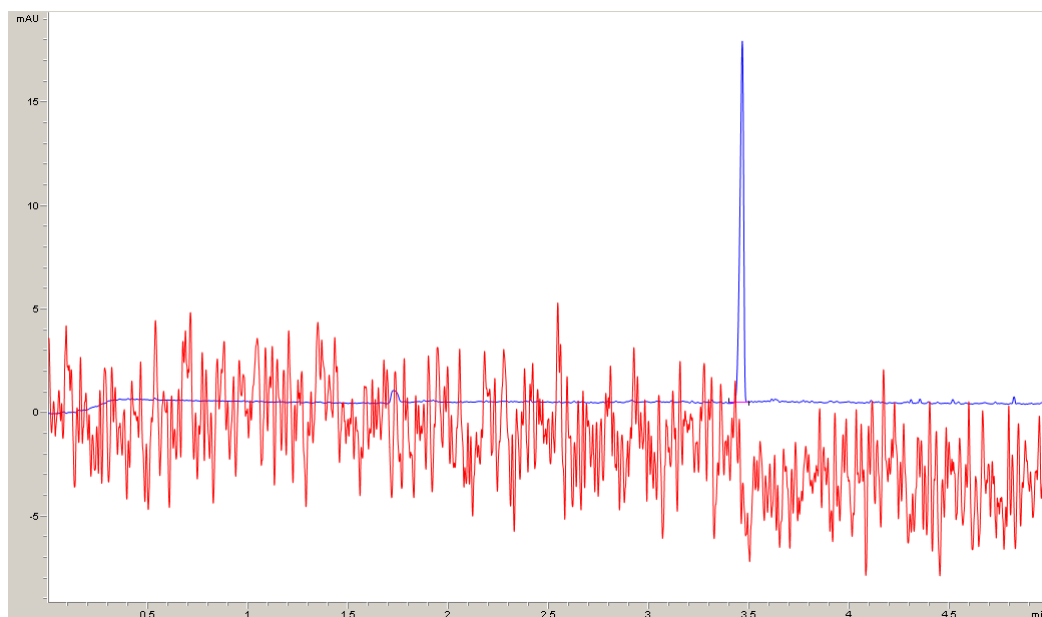
**Figure 5** Spectrum in **Holmium Oxide Test** without any filter inserted



**Figure 6** Spectrum in **Holmium Oxide Test** inserted 280 nm high pass filter G7100-68750

## What Can Happen if You Work in the Low UV Range With the Filter Installed?

With the filter installed, the light transmission will be extremely noisy and in worst case even no peaks at all will be obtained, see [Figure 7](#) on page 4.



**Figure 7** Signal at 250 nm of CE separation of the same component with 280 nm high pass filter G7100-68750 installed (red) and without any filter installed (blue)



G7100-90112

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Agilent Technologies, Inc  
Hewlett-Packard-Strasse 8  
76337 Waldbronn  
Germany