



## Cuvette Cleaning Procedure

**Applicable to: Re-usable quartz or optical glass cuvettes for NanoLab 3D and LS Spectrometer II (equipped with Sample Goniometer Pro)**

- I. Clean glassware as soon as possible after use.**
  1. Empty and properly dispose of current contents.
  2. Make sure to remove all labelling tape or paper labels.
- II. Rinsing process:**
  1. Rinse glassware 3x with D.I. water.
  2. Rinse glassware 1x with Milli-Q water.
  3. Invert glassware and allow to dry. Blow the cuvettes dry using clean air and leave them to dry out in a dust-free environment. Alternatively, rinse them with a highly volatile solvent, such as ethanol. Then allow the solvent to evaporate.
- III. If any visible residue remains in the glassware, prepare and use a detergent bath as follows:**
  1. Soak glassware for 2 hours in a Hellmanex bath ( 2 vol.% Hellmanex solution in warm water). Clean flow-through cuvettes by pumping the cleaning solution through the cuvette. The cleaning process can be sped up by gently heating the cleaning solution.
  2. Return to step II above, ensuring to rinse both the interior and exterior surfaces of the cuvette(s).
- IV. If stubborn visible residue still remains in the glassware, prepare and use an acid bath as follows:**
  1. Transfer glassware to acid bath (~10% HCl) for a minimum of 1 hour. Wear dishwashing (orange nitrile) gloves when working with acid bath. NO single use gloves. Make sure that interior surface of glassware is fully submerged in acid (no air bubbles).
  2. Remove glassware from acid bath and drain as much acid back into bath as possible. Take care not to drip or splash acid outside of bath.
  3. Directly return to Step II above, ensuring to rinse both the interior and exterior surfaces of the cuvette.



## General notes:

- I. **Cuvette Washers:** A cuvette washer effectively ensures thorough rinsing and cleaning of cuvettes. It operates by combining a cuvette cleaner with a vacuum pump, allowing the cleaning solution or water to be pumped through the cell. This process integrates the mechanical force of the water flush for enhanced cleaning efficiency. This generally works well for cuvettes with larger openings (5mm interior dimension cuvettes or larger)
- II. **Ultrasonic Cleaners:** The use of ultrasonic cleaning baths with cells is not recommended. Each bath generates a different frequency, and if the bath operates at the resonant frequency of a cell, it may cause the cell to break. Therefore, the manufacturer nor LS Instruments honors a warranty for cells cleaned using an ultrasonic cleaner.
- III. **Cuvette Cleaning Guidelines:** Avoid leaving the cuvette in any of the aforementioned cleaning baths for multiple days. Prolonged exposure can lead to water evaporation and increase the aggressiveness of the cleaning solution, potentially damaging the glass surface.



## Additional References:

[Hellma - Cleaning and handling of cuvettes](#)

[Starna – Care and Cleaning of cells](#)

Last Updated: 13 July 2024