Cuvette Handling And Cleaning

Light scattering is very sensitive to the presence of larger particles. As such it is very important to minimize the presence of contaminates, of any kind. An important part of this process is to ensure that the measurement cuvettes are cleaned thoroughly and properly, so that no adverse effects are caused by the device holding the sample.

Disposable Cuvettes
Disposable cuvettes are routinely used under conditions where the sample light scattering signal is significant. Disposable cuvettes are typically delivered clean and can be filled with the sample directly. If one wishes to reuse a disposable cuvette, it is recommended that the cuvette be thoroughly rinsed with sample buffer/dispersant prior to measurement, and then rinsed post measurement with an appropriate solvent (typically water). Should disposable cuvettes be left open and uncovered in the lab, they are likely to collect dust. In this case it is often possible to use compressed air to lift the dust off the plastic surfaces. It is not advisable to use disposable cuvettes too many times, as they tend to become scratched on the side windows.

Quartz & Glass Cuvettes
Glass cuvettes are of excellent optical quality and can withstand many solvents and chemicals. With regard to cleaning, a mild soap solution is generally sufficient. The Malvern recommended cleaning solution is Hellmanex II, from Hellma (), which is strong enough to remove even the most stubborn of contaminants, such as sticky proteins absorbed to the surface of the cell. A 10 minute soaking in a soap solution is typically sufficient for cleaning purposes, although longer times combined with an ultrasonic bath may be required for extremely dirty cuvettes.

Historically, chromo sulphuric acid has also been used for cleaning glass cuvettes for light scattering experiments. But a word of caution; aside from being extremely hazardous, materials other than quartz or glass (such as plastics or metals) may be affected, and the cuvettes may be corroded and become "blind" over time.

In general, the best treatment of quartz and glass cuvettes is to immediately rinse with lots of buffer (or clean water) and then blow the water out with clean compressed air. If the sample was sticking to the glass, or if the protein is not very soluble, a step with a detergent solution (Hellmanex II) may be required to lift contaminants off the quartz surfaces. Don't forget to thoroughly rinse with copious amounts of water to ensure that all micelles traces are removed.

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