RSI Technical Note 033

Probe Preparation and Treatment of the SBE7 Micro-Conductivity Probe

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1 Visual Inspection

Conduct a visual inspection of the SBE7 micro-conductivity probe. Bent or broken probe tips are a clear sign of gross damage, which may not be repairable. If there is no sign of gross damage, then inspect the SMC connector and the two electrode tips. The SMC connector should be shiny, clean and show no signs of tarnish. The electrode tips should be black circles, inspect the tips with a magnifying glass or microscope for any deposits on the black electrical contact surfaces. The black material is platinum-black which is a sponge-like coating that is critical to making good electrical contact with seawater. If shiny metal is visible in or around the electrode tips, then the platinum-black coating has been removed and the probe is mechanically damaged. This type of damage is likely to occur if the electrodes have contacted a solid surface. Such a probe will not hold its calibration and will yield noisy data.

2 Cleaning

If the micro-conductivity probes have visible discolouring on their tips (e.g. gray or brown spots), we recommend cleaning the micro-conductivity probe as follows:

1. Soak the probe in 1% Triton X-100 (see Note 1) for 10 minutes (see Figure 1). Do not allow the probe connector to get wet.
2. Rinse the probe with distilled water and let it dry.
3. Conduct a visual inspection with a magnifying glass and confirm that the electrodes return to a "jet black" appearance (see Figure 2).

If there are still deposits on the electrode tips, then repeat the above procedure but increase the soak time; up to 16 hours. Use a magnetic stirrer to keep the Triton fluid moving over the electrode tips to accelerate the cleaning process. If this does not clean the surface, it may have to be returned to Rockland.

3 Storage

If the SBE7 probe is clean, then it can be stored with its "syringe" style protector to keep it dry.

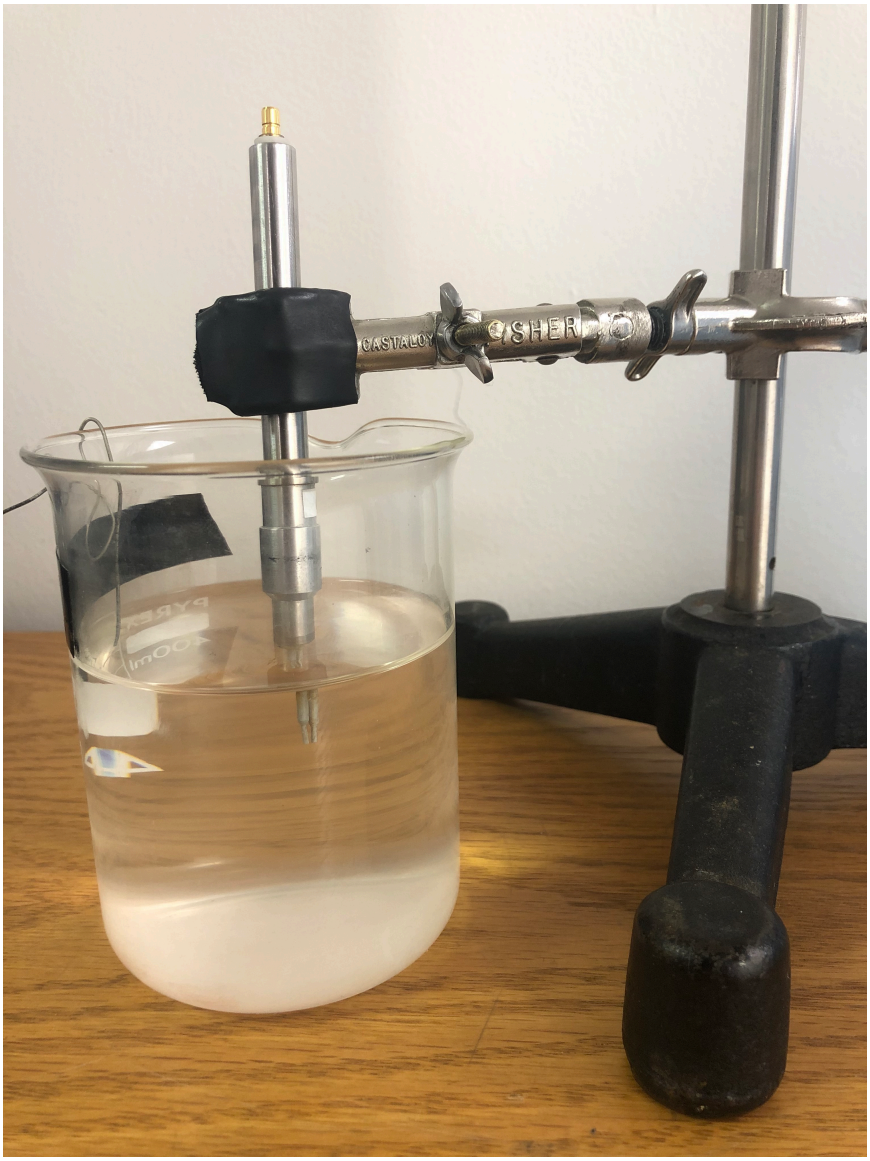

Figure 1: A SBE7 Micro-conductivity probe soaking in Triton X-100 solution. A magnetic stirrer may need to be added for improved effectiveness.

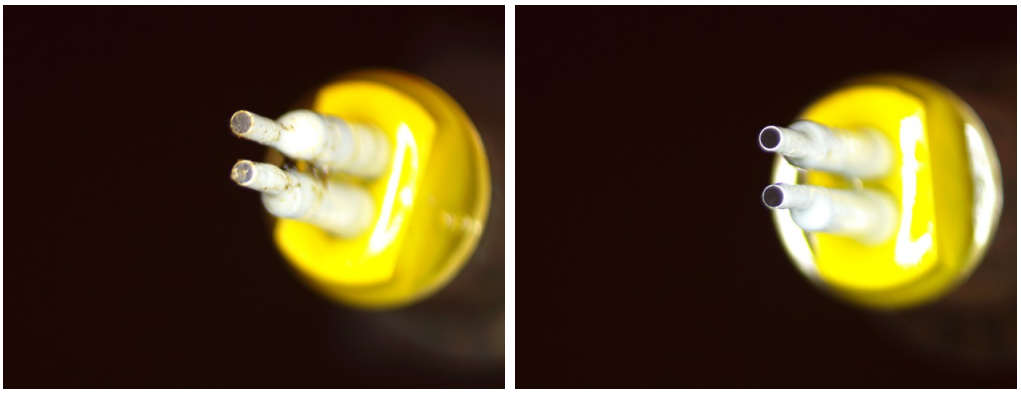

Figure 2: Microscope images of a SBE7 Micro-conductivity probe with dirty electrode tips (left) and clean, jet black, electrode tips after soaking in Triton X-100 solution (right). Note that there are no scratches present on the electrode tips.

4 Preperation for Deployment

Use of the SBE7 probe should be preceded with a soaking in 0.1% Triton X-100 for one hour, followed by a quick rinsing with clean water. Triton X-100 is a powerful wetting agent that quickly removes particulate stains and some oils and greases. Pre-soaking the electrode tips is essential for wetting the surface so that the probe returns to its previous sensitivity. The probe can be pre-soaked by filling the protective cap with solution.

If Triton X-100 is not available the SBE7 probe can be soaked in local sea-water prior to deployment to wet the surface of the probe.

Failure to wet the probe before deployment may result in erroneous data untill the probe has been sufficiently wetted by surrounding sea-water.

5 Notes

Note 1: Triton X-100 is Octyl Phenol Ethoxylate produced by the J.T. Baker Company. This, or its equivalent, should be readily available from a local chemical supplier. (If you are located at a university, your chemistry shop on campus may even have it.)

Note 2: The SBE7 micro-conductivity probe is manufactured by Sea-Bird Scientific. See application Note No. 2D, revised September 2008.

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