Probe Making

Seth John

Abstract

The goal of this protocol is to produce carbon-fiber probes for use with an ICPMS or ESI PrepFast/Seafast.

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Guidelines

Supplies:

- Sample tubes (Glass Expansion). NFT2-025 Unifit connector with 1.3 mm OD x 0.25 mm ID x 2000 mm long sample tube (PKT. 10). You could use the 0.5 mm ID tubes for higher flow rate, but we often prefer the smaller ID tubes for ICPMS work because they have a low dead-volume and thus a quick uptake time. For the Prepfast/SeaFast, it might be better to get some 0.5mm ID tubes.
- Carbon fiber (CST – The Composites Store, Tehachapi, CA). 2.5 mm OD, 1.5 mm ID carbon fiber tubes
- FEP inner end cap material (McMaster). 8703K113, 0.05" before shrinking, FEP, 1.3:1 shrink ratio
- FEP middle end cap material (McMaster). 8703K115, 0.08" before shrinking, FEP, 1.3:1 shrink ratio
- FEP outer sheath material (McMaster). 8703K115, 0.12" before shrinking, FEP, 1.3:1 shrink ratio

Protocol

Step 1.

Cut a 5 ¼ inch length of carbon fiber tube, a 6 inch length of FEP outer sheath material, two ¾ inch pieces of inner end-cap material, and two ¾ inch pieces of middle end-cap material.

Step 2.

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Place the inner end-cap material around the sample tube, slide up to an appropriate height so that there is enough space for the carbon-fiber tube below, and so that the overall sample tube length is correct, and shrink it on.

Step 3.

Shrink the middle end-cap material over the inner end-cap. Slide the sample tube into the carbon fiber tube.

Step 4.

Similarly, shrink on inner and middle end-caps onto the sample tube below the carbon fiber. Shrink a single piece of FEP sheath material over the whole assembly. Cut the end on a slight angle.

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