Week of Dec 8-13:
Came in morning of Monday Dec. 8, collared and polished a bundle of milled SciFis.

Came in Thursday, cleaned scale from three bent fibers.

Set up a test apparatus for removing some $CaCO_3$ from the bending water loop and reducing scale formation on fibers and metal components. This consists of a piece of aluminum heatsink (chosen for its high surface area parallel to flow from the pump) wired to a +5V pin on the DAQ board (the same which controls the thermistors, so the electrode will always be on during tank operation). Probing with a multimeter showed the water in the tank loop to be grounded, probably due to contact through the pipes, so no additional anode needs to be supplied.

Ideally cathodic layers of the heatsink will create a highly localized region of elevated pH which will supply OH^- and promote reaction of Ca^{2+}, HCO_3^- and OH^- into $CaCO_3$ and H_2O, where the $CaCO_3$ will then precipitate onto the surface of the electrode. This has been a documented method of removing scale-producing compounds from water heating apparatus. The electrode is intended to be placed over the outflow of the left heater, labeled valve 10 in the box.

Some papers I read on the method are found here:
http://gwri-ic.technion.ac.il/pdf/gwri_abstracts/2010/5.pdf

http://journals.tums.ac.ir/upload_files/pdf/_/13583.pdf

The second details operation of similar devices using aluminum electrodes at between 5 and 20V over a period of up to an hour, and their effectiveness at removing contaminates. In a closed circulated water loop over a period typical of the heating and bending process the purification could be greater.