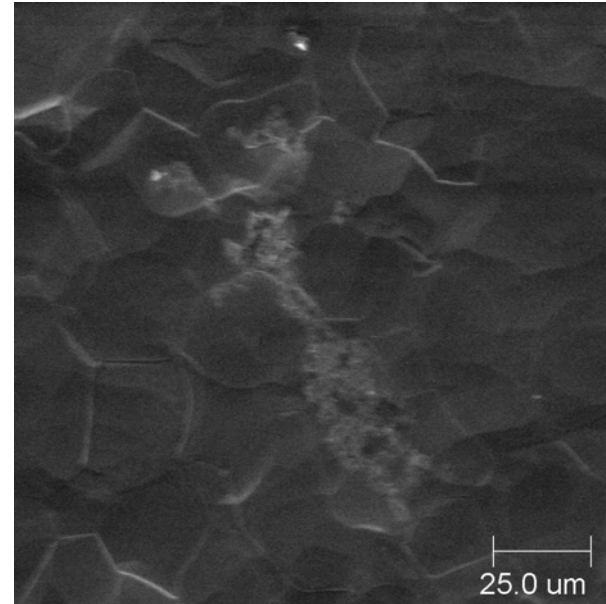
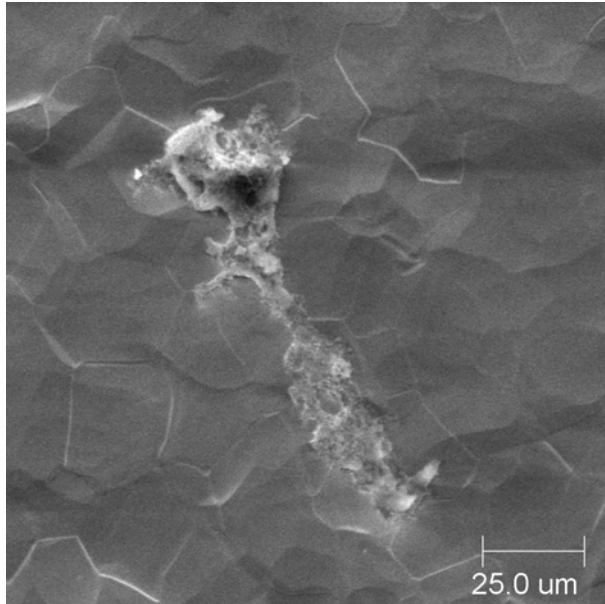


A of S contamination on Nb surface

Linh Nguyen, H. Padamsee



Motivation:

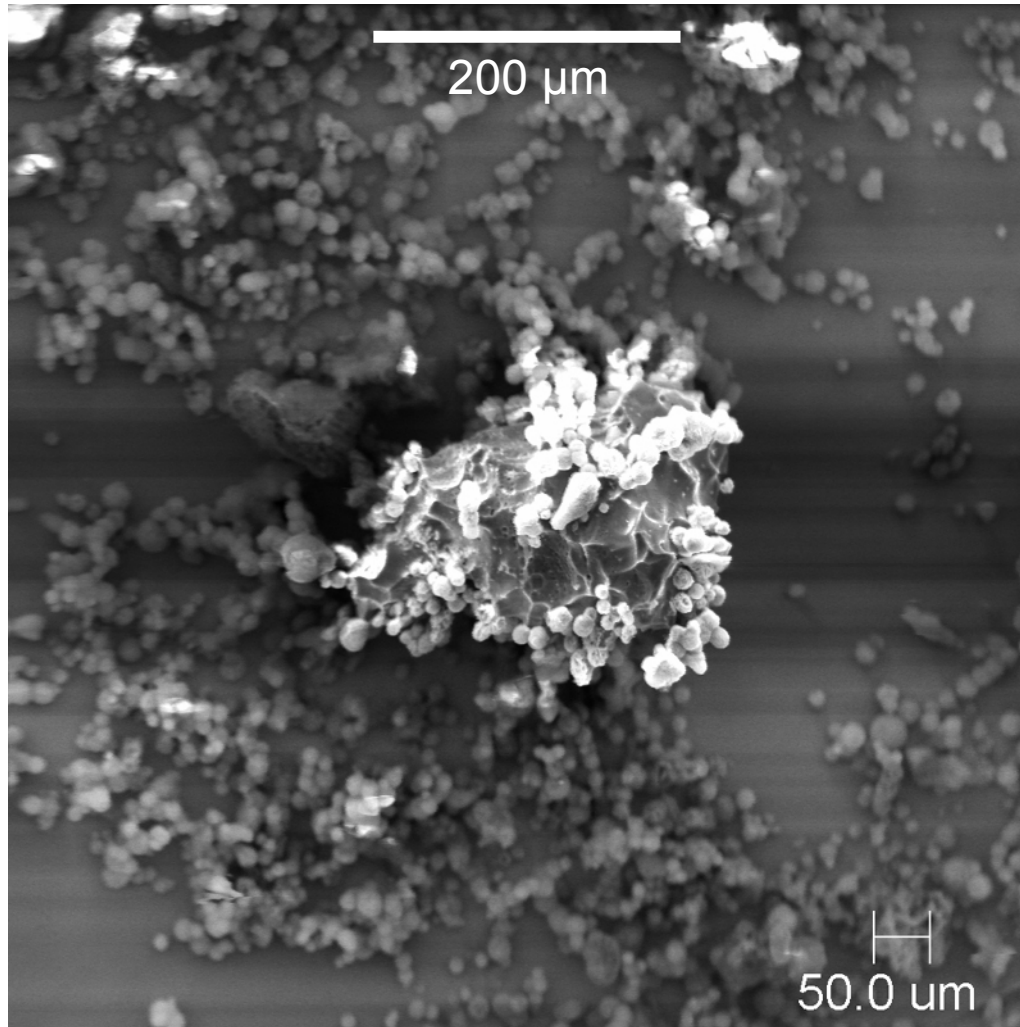
To determine if S particles react with Nb surface and the depth of the interaction.

How deep is the S present?

How much does ethanol rinsing remove?

How much does Ultrasound degreasing remove?

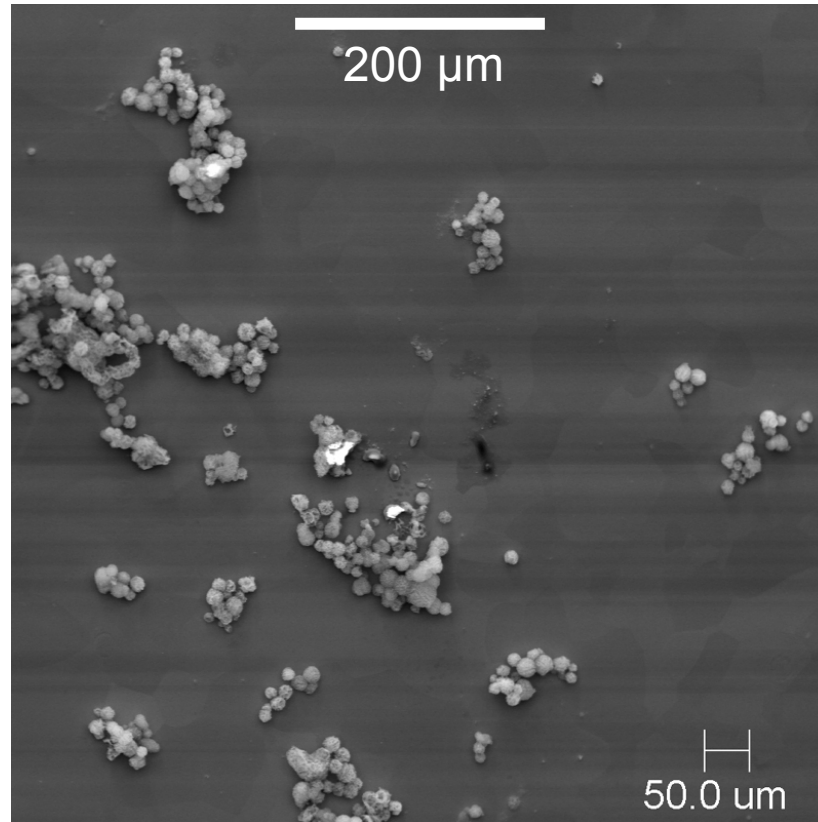
As prepared Sample



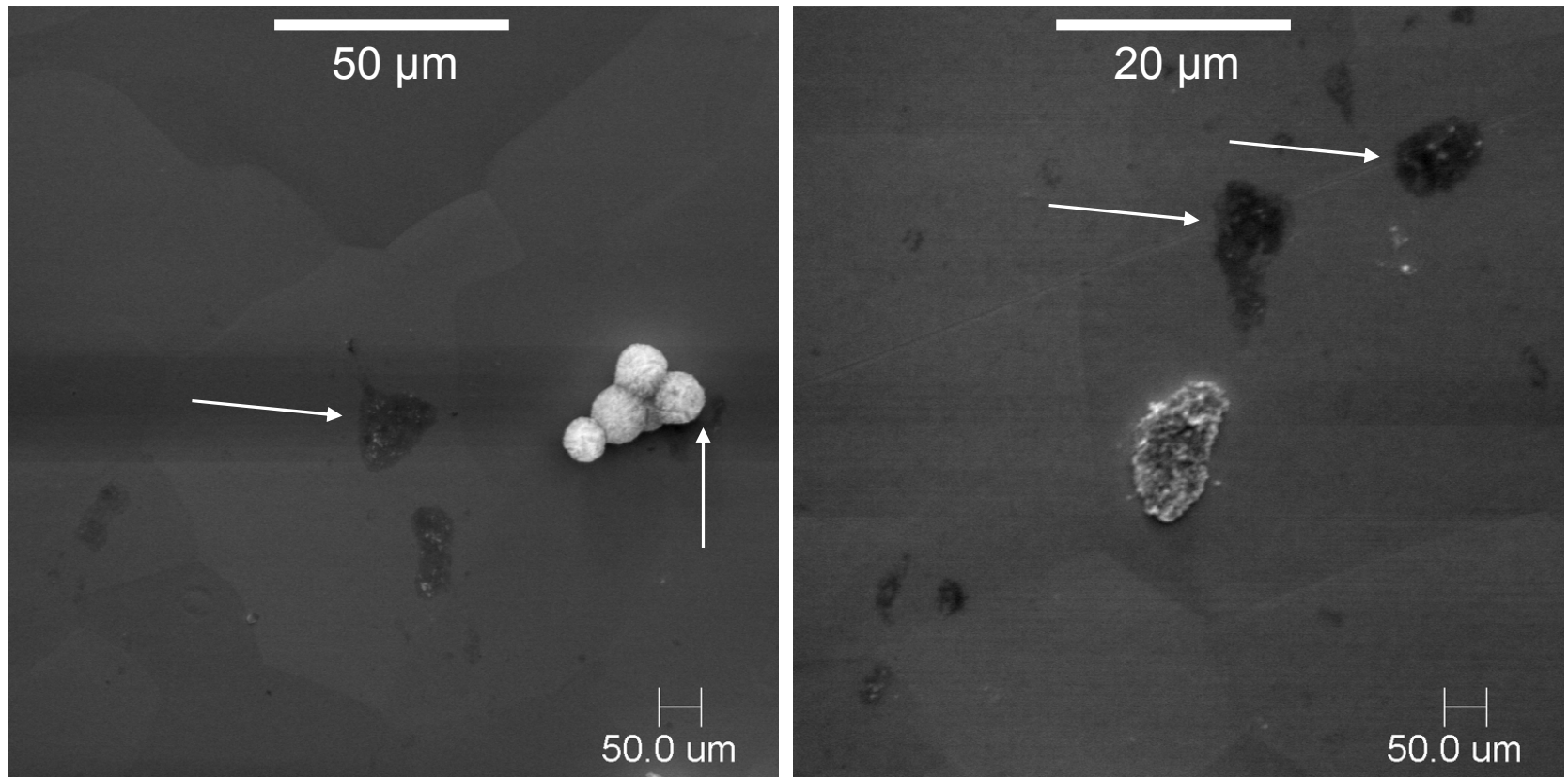
Preparation:

1. Nb sample and water
2. Add S powder
3. Dry water in clean room

After 1hr dissolved in Ethanol

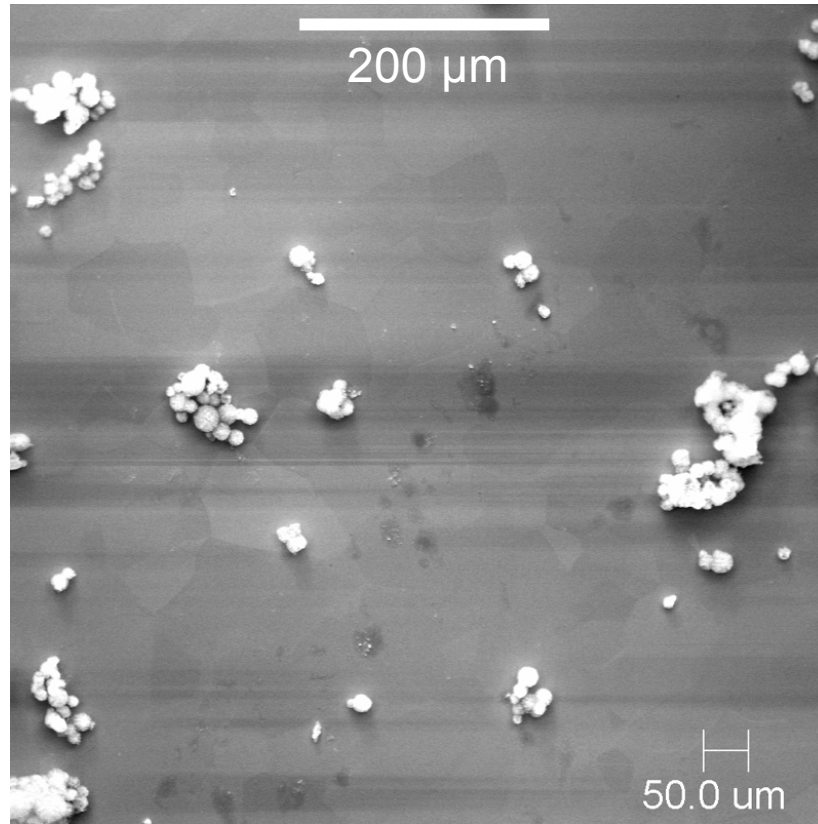


→ *Ethanol dissolves some S but not all !*

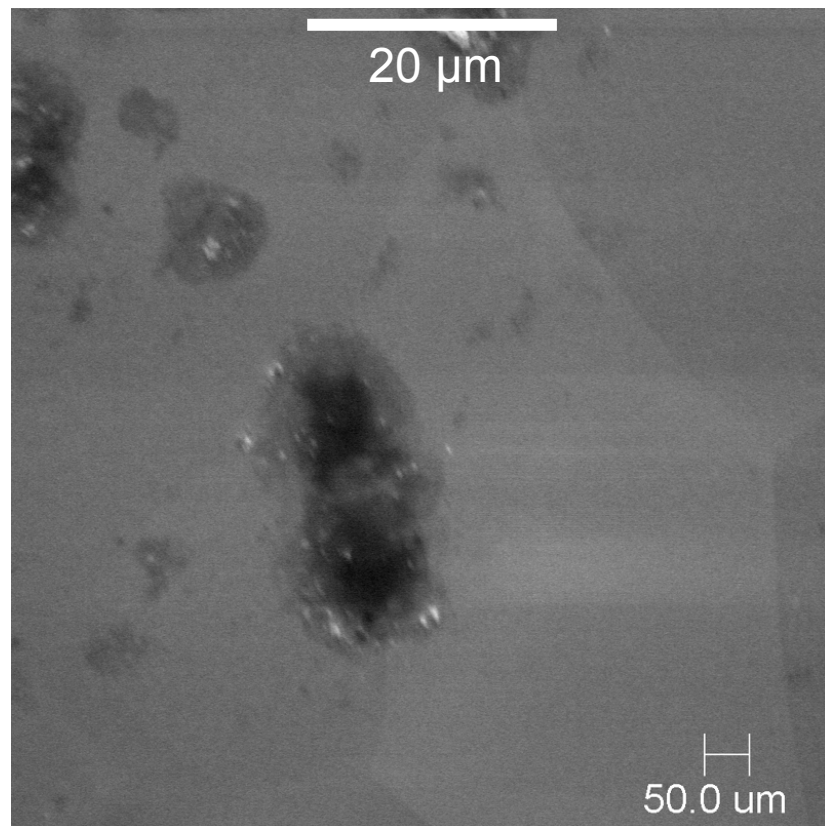
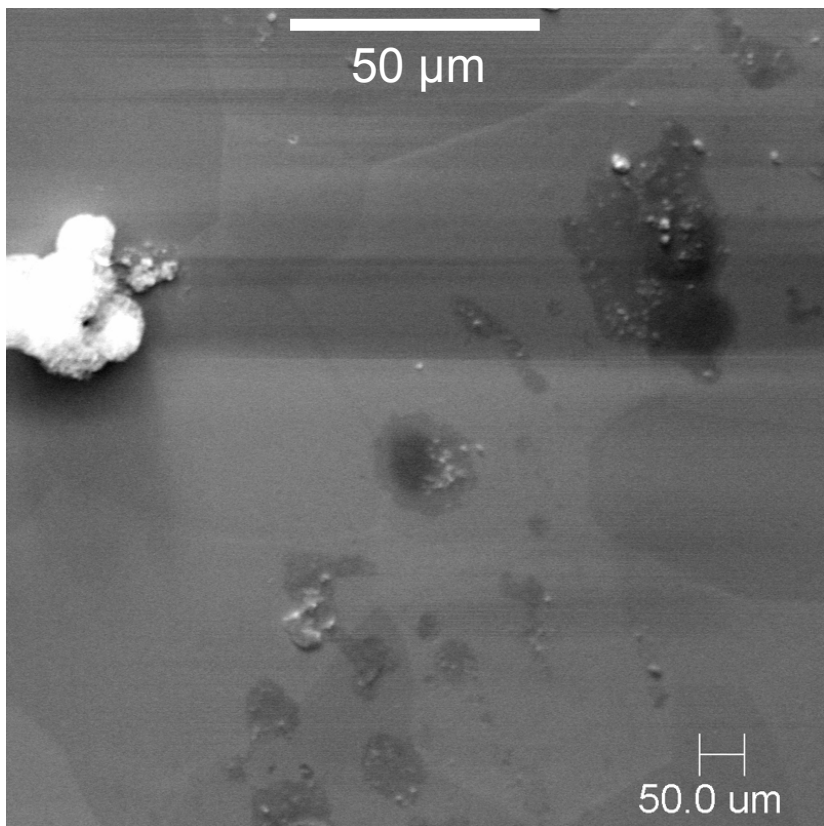


→ *Some imprints were seen. These are the reaction sites.*

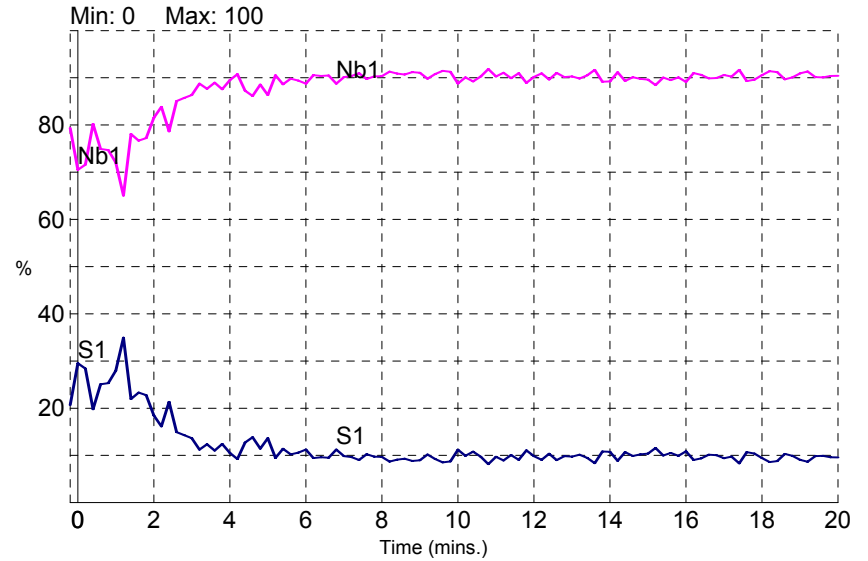
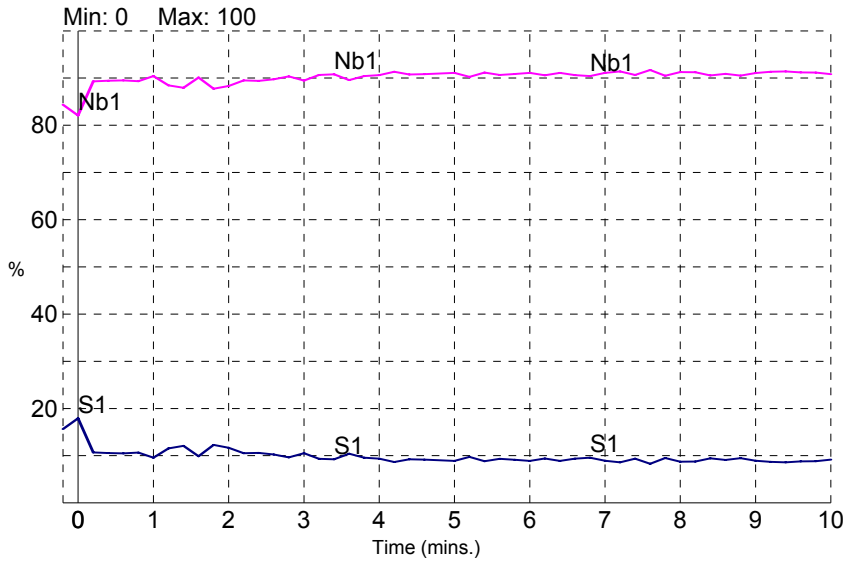
+ 1hr dissolved in Ethanol



→ *More imprints are shown on Nb surface under the S particles*



Auger depth profile

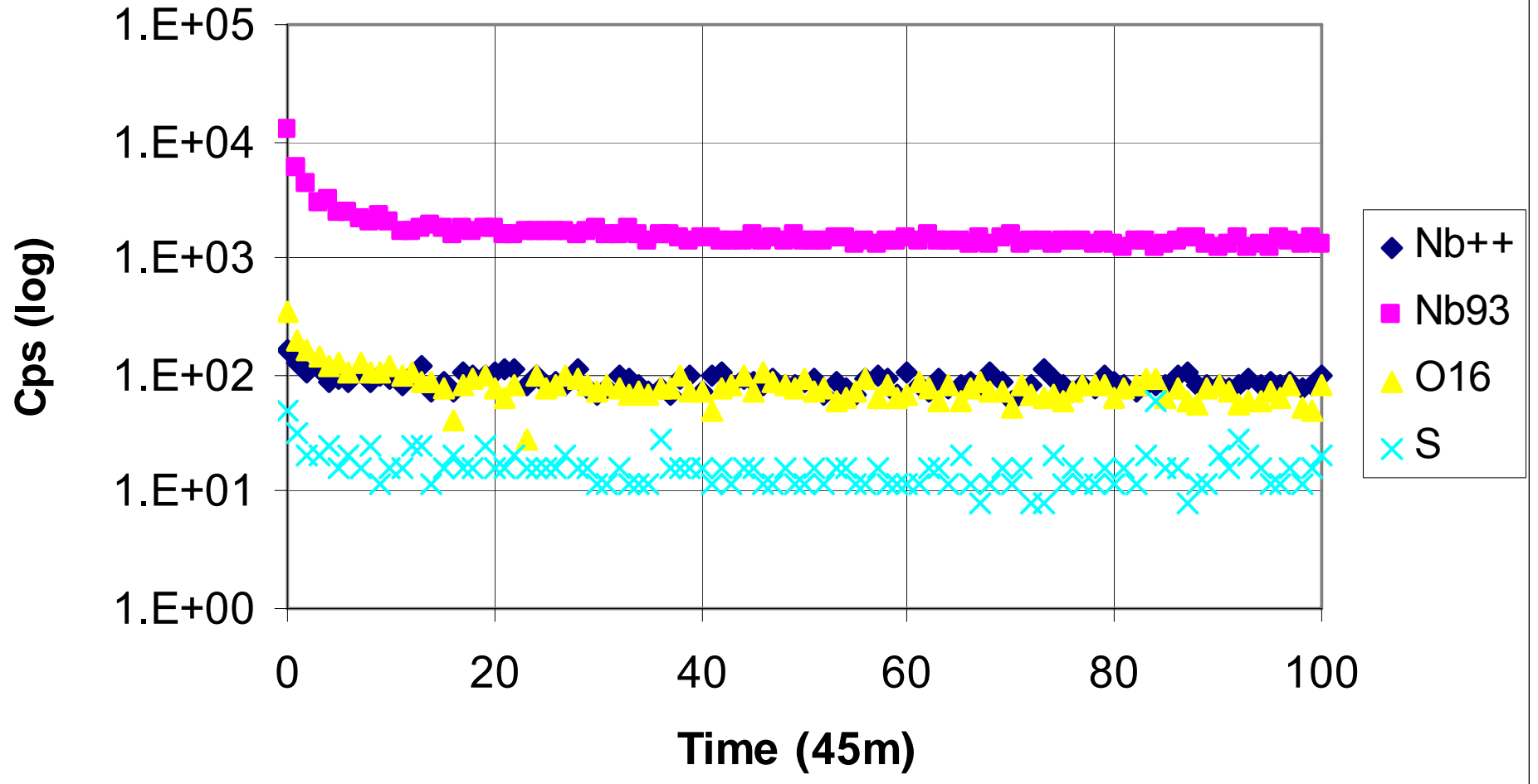


(Two different spots)

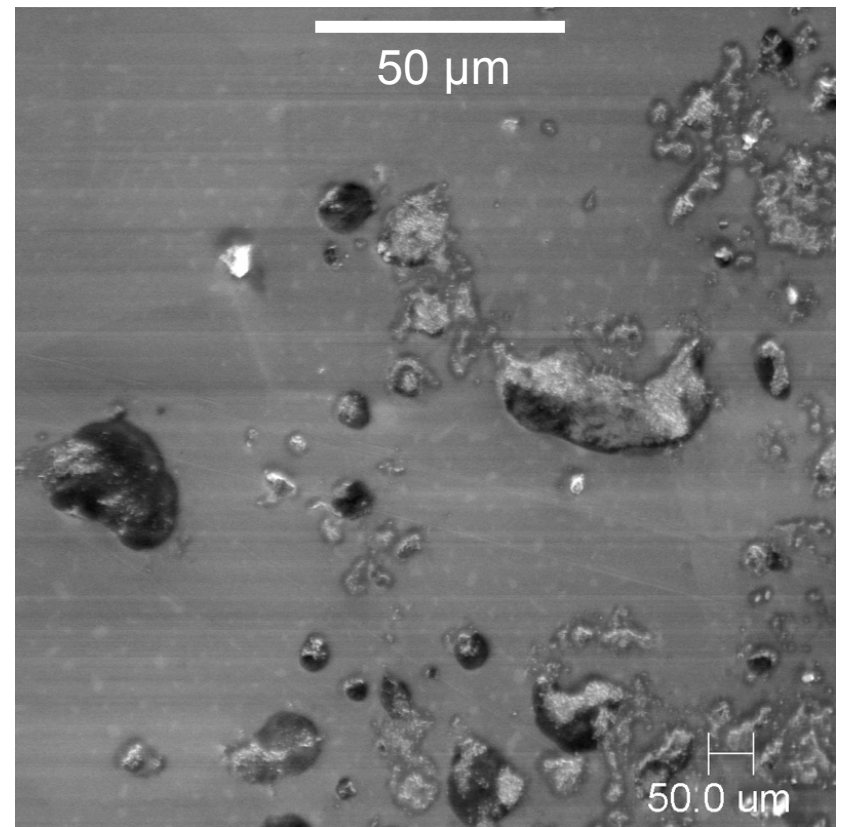
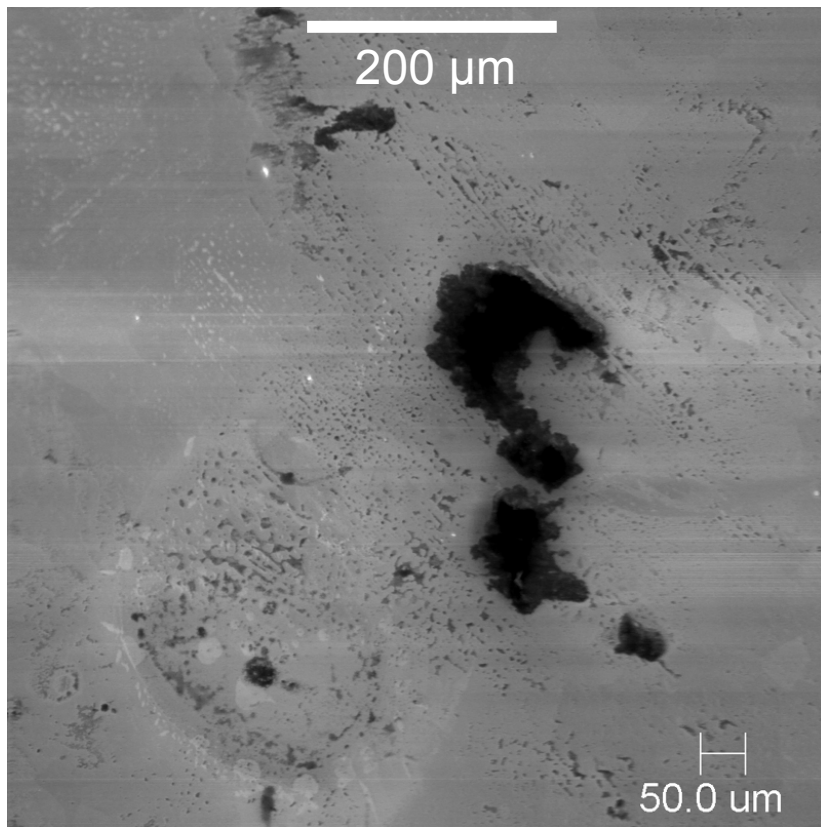
Crude sputtering rate 10 angstrom/minute

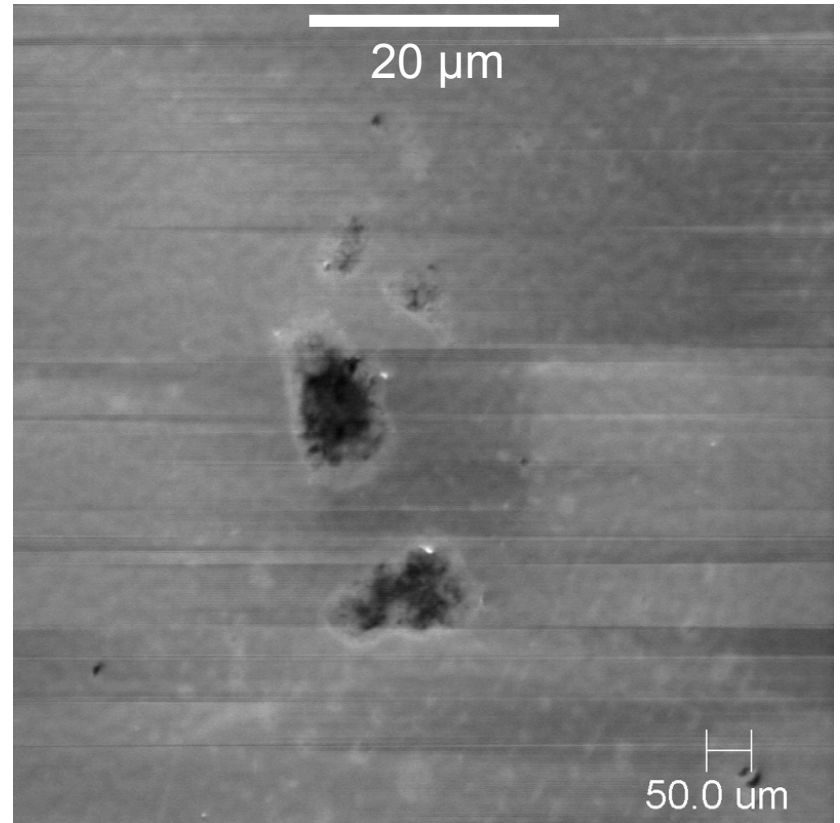
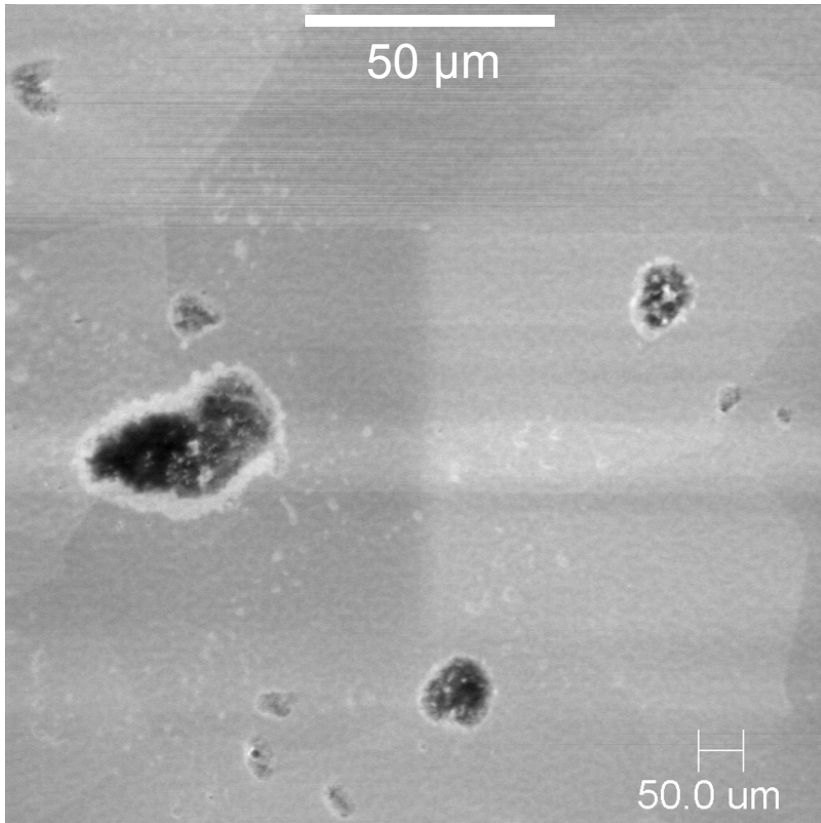
SIMS depth profile

Spot 1

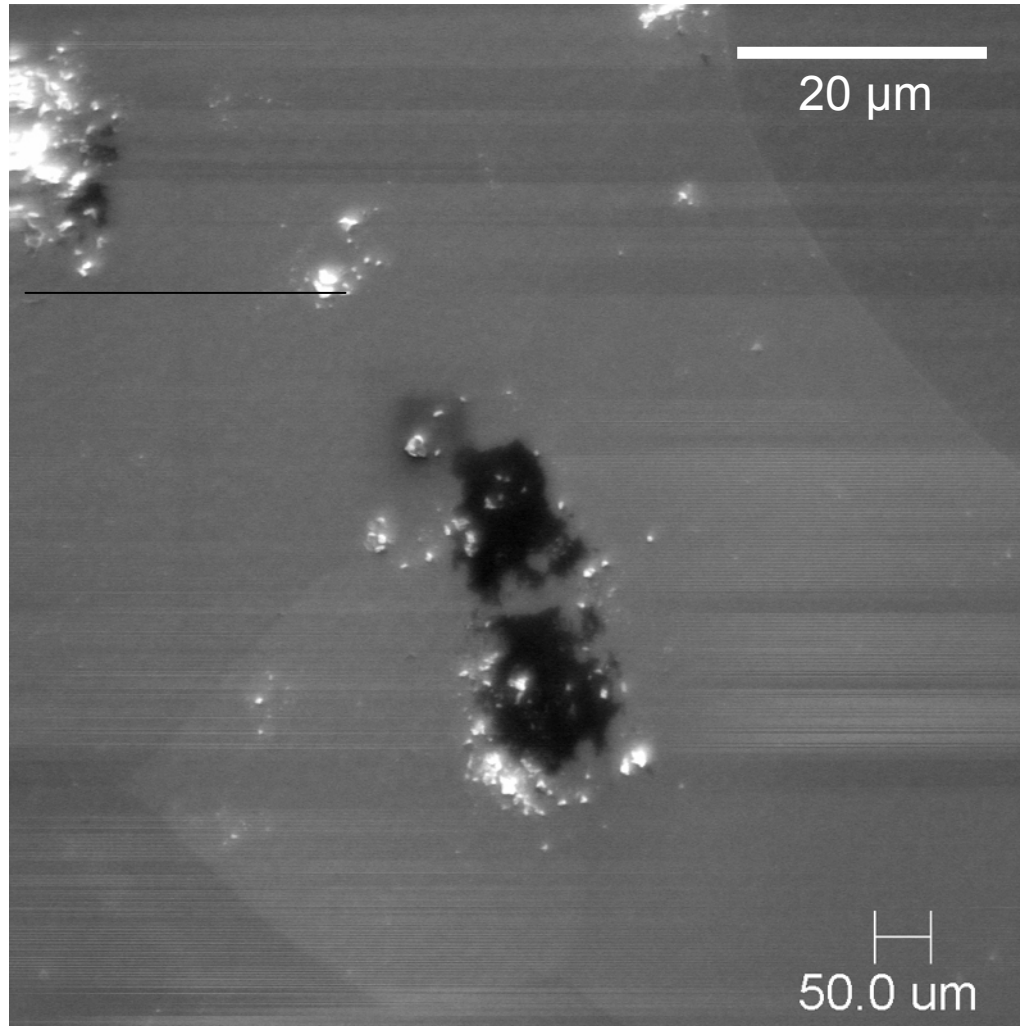


After 30 mins in untrasound + water + soap

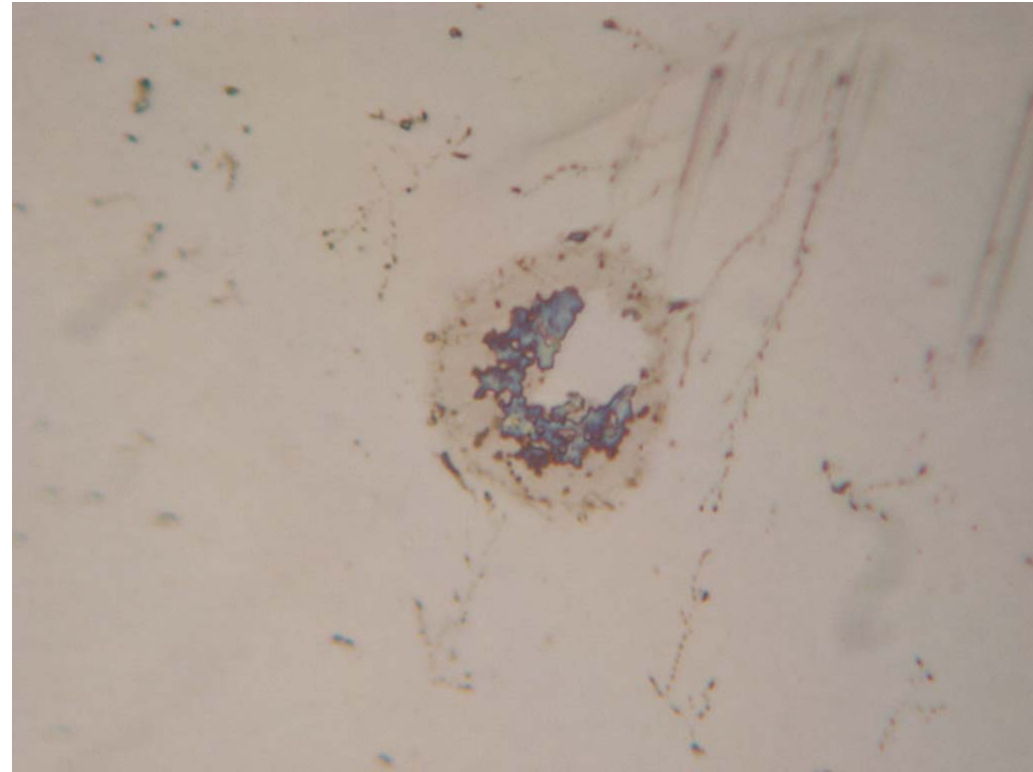
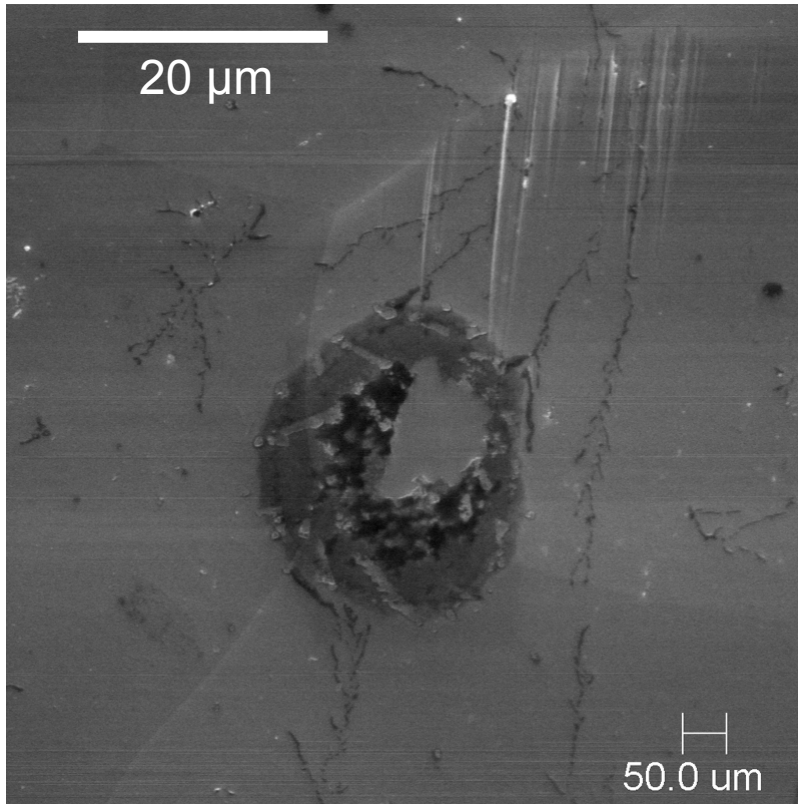




Ultrasound Degreasing still leaves S

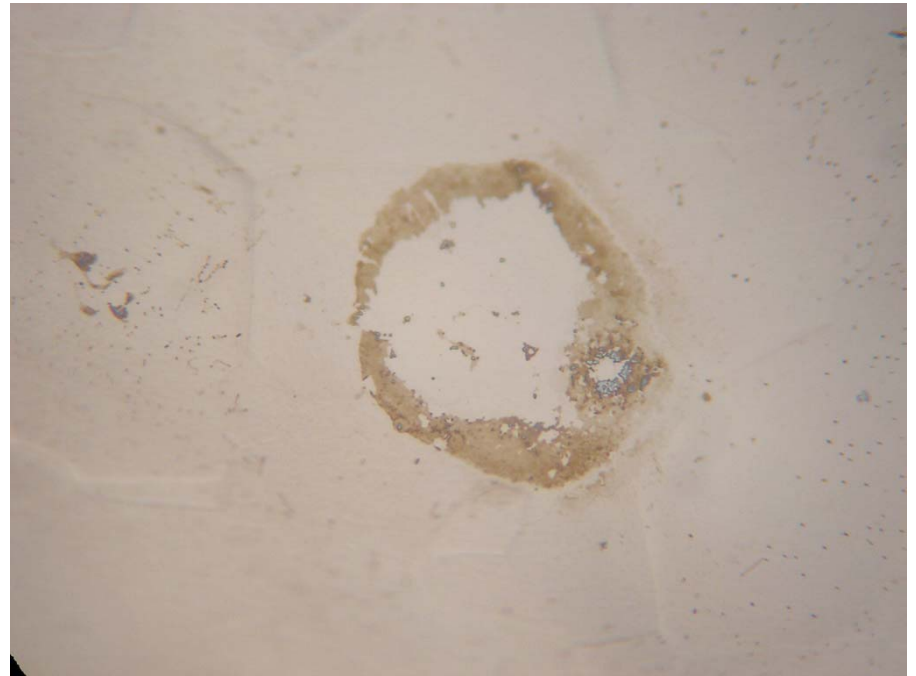
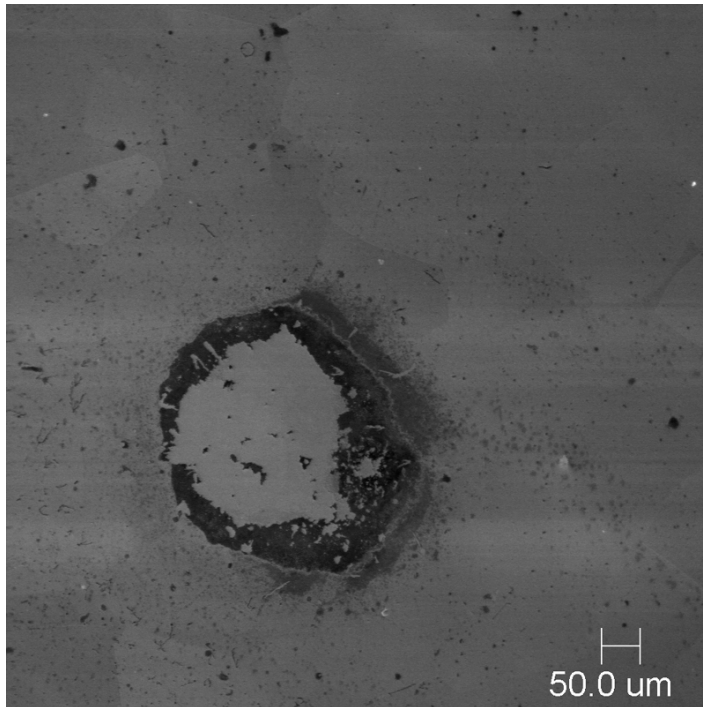


The imprints are also visible with optical microscope

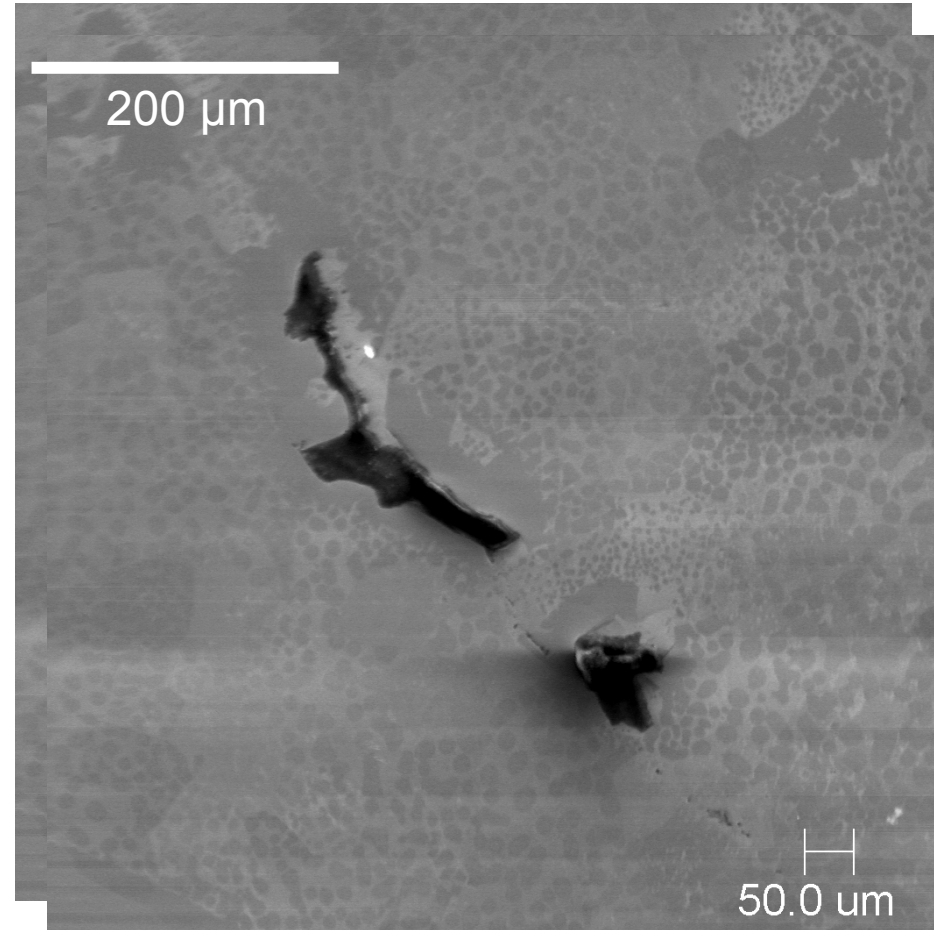
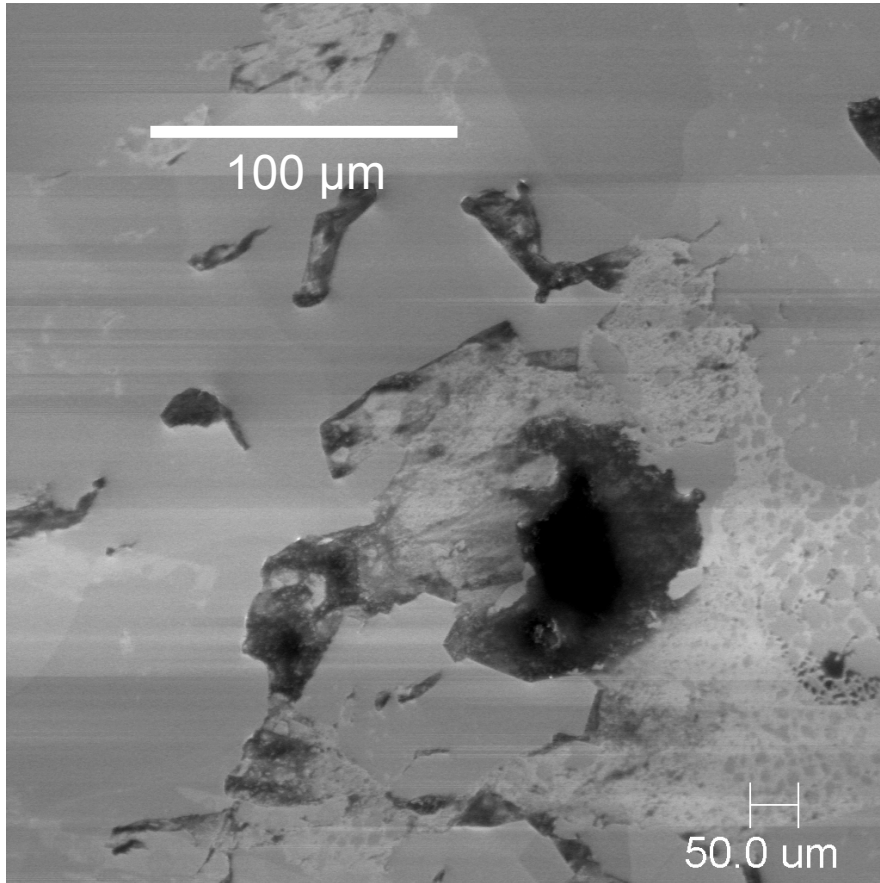


- ⇒ We should be able to find these in a cavity
- ⇒ using good optical microscopy

Another comparison



After one cycle HF



Removal is not complete

After 2 cycles HF

- Small spots still remain

