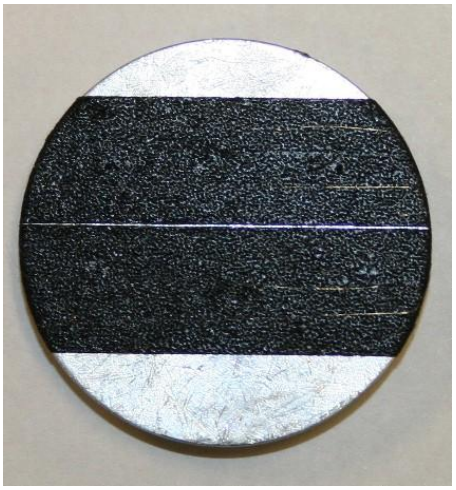
Hall D Wire Characterization
Samples F8-1 & F8-2

1. **Sample preparation:** ultrasonic cleaning in DI water for 45 minutes.
2. **Sample installation:** for SEM inspection wires were installed on a sample holder (diameter=36 mm) on 2 stripes of conductive carbon tape, 2 fragment of each sample per stripe (nomenclature: F8-1a, F8-1b and F8-2a, F8-2b).

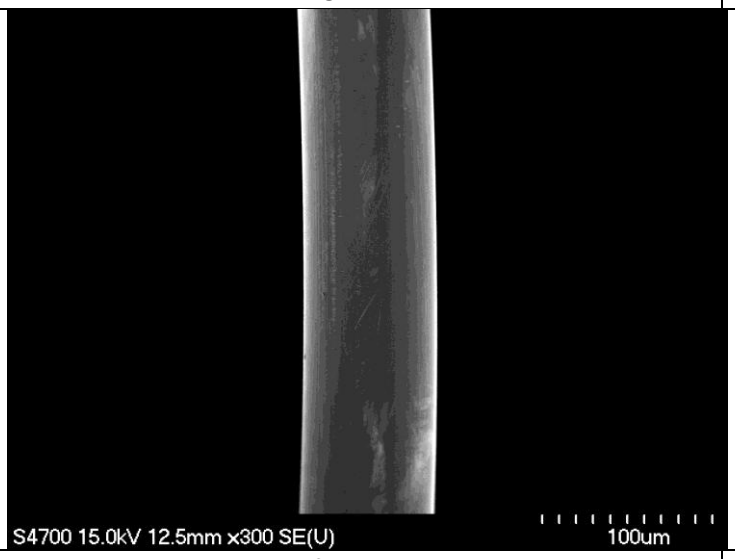
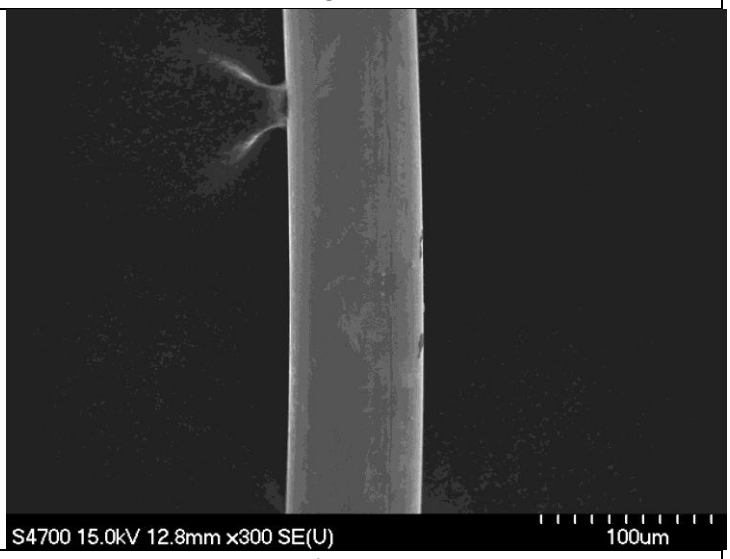
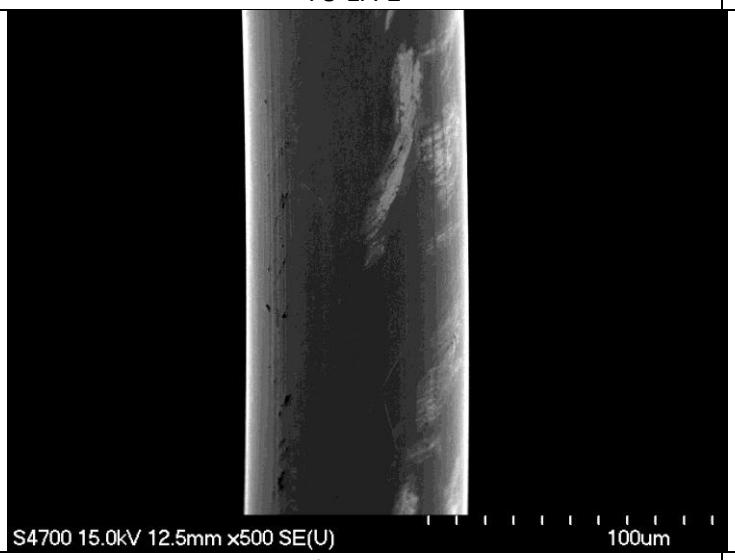
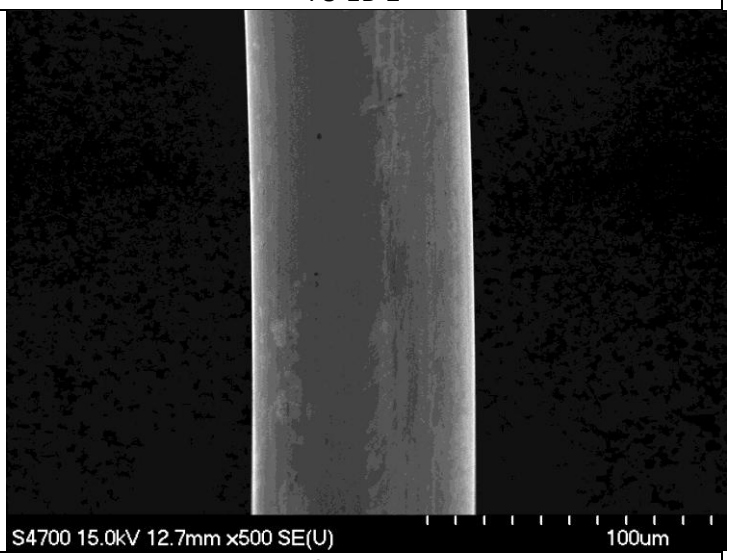


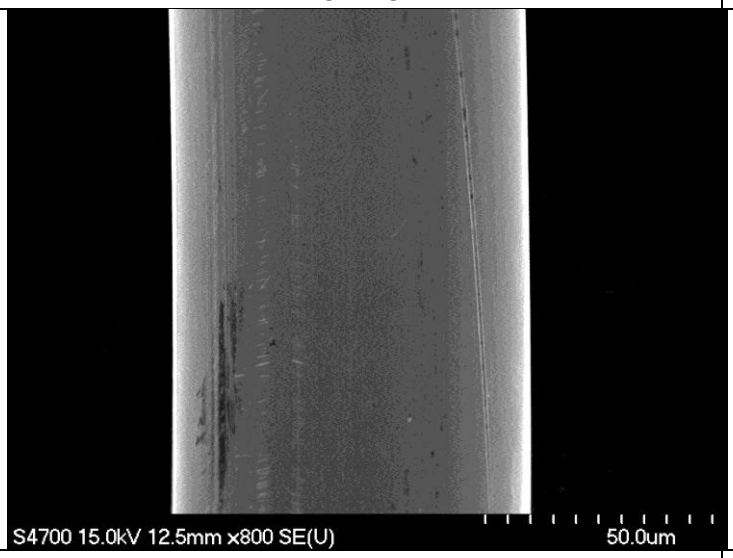
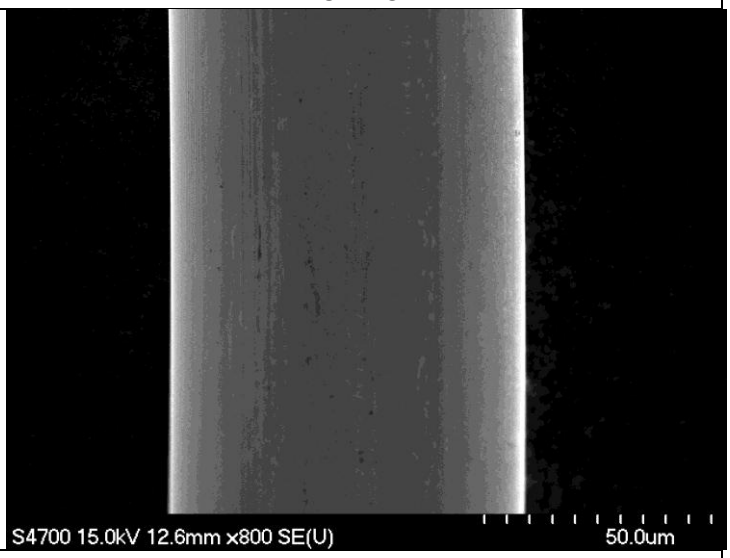
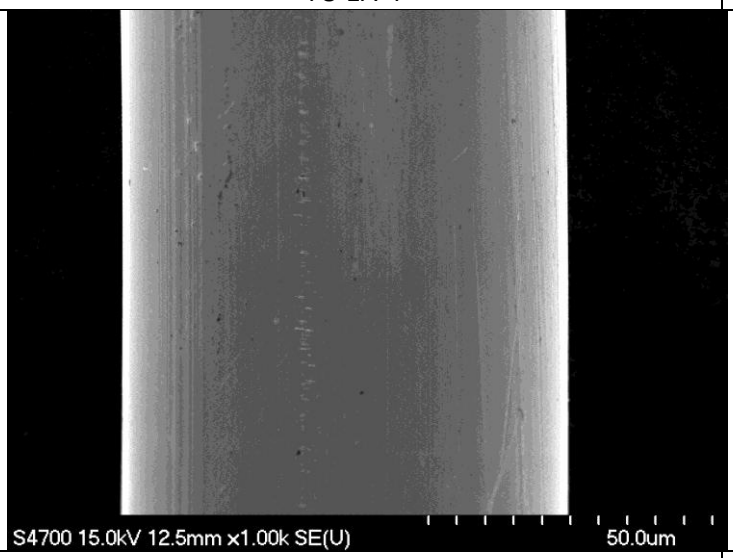
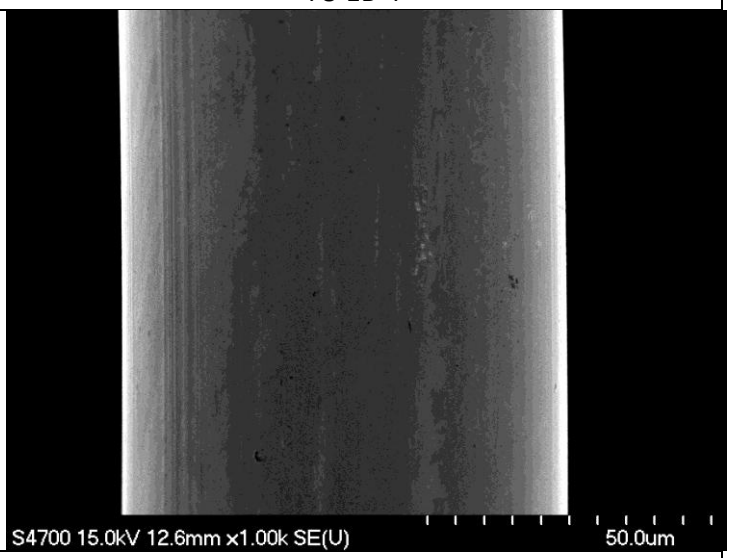
Pic1. Typical sample installation.

3. **Wire inspection:**
   a) Each wire fragment was examined along its length (beginning at approximately 5mm from the sample holder edge and ending ~5mm before the opposite edge) at magnification of ~x600, at fast scan rate.
   b) Images at designated magnifications (x300, x500, x800, x1000) were taken randomly along the sample length;
   c) Images for the ovality measurements were taken at 1000x magnification in three points of each wire fragment: in the middle (approximately) and close to both ends;
   d) Measurements of wire diameter, as visible on the images, were done using the Quartz PCI Image Management System, 3 measurements per image;
   e) Additional images at various magnifications were taken at the points of interest (variations in sample topography, contaminated areas, etc.)
   f) EDS analysis was performed on the most typical points of interest.

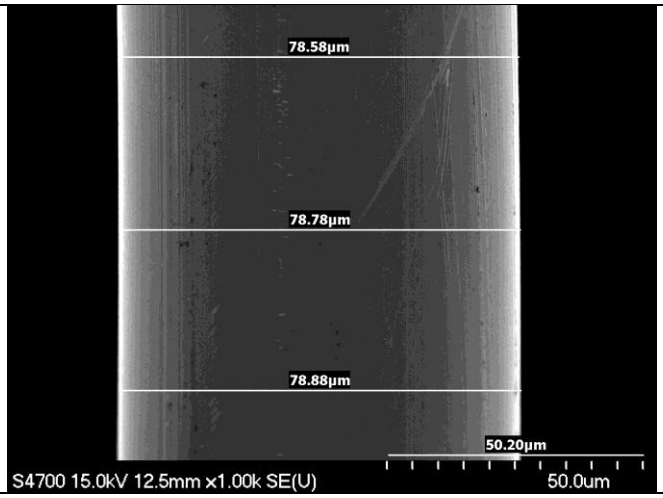
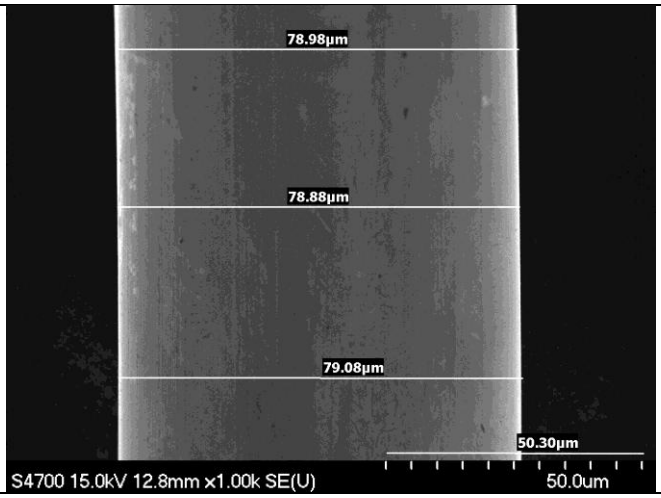
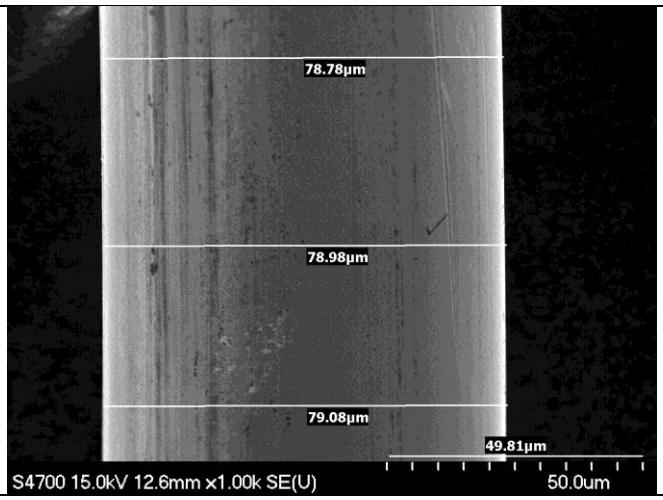
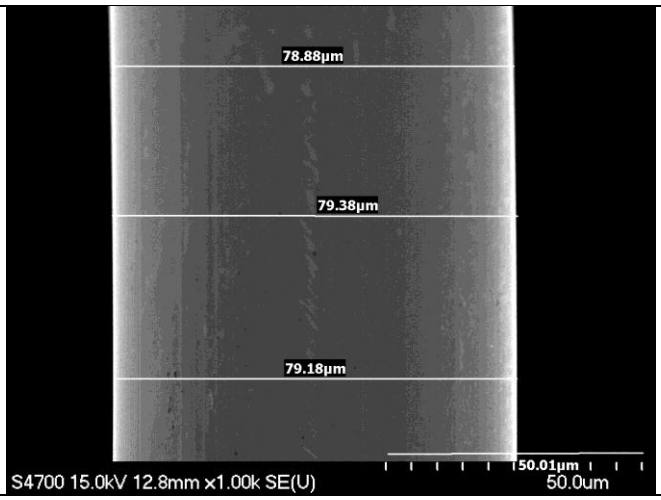
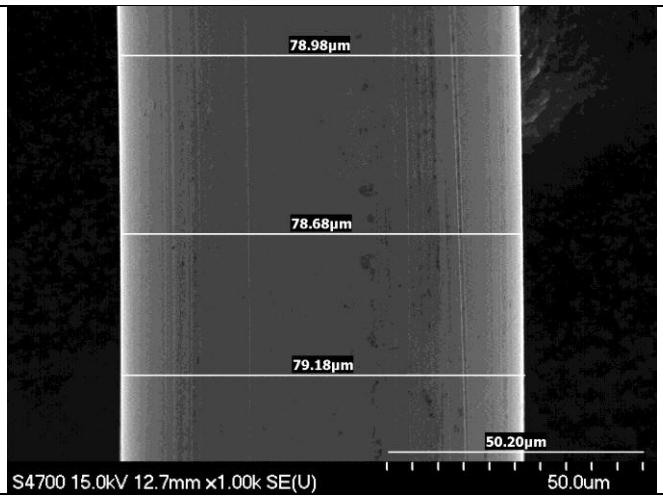
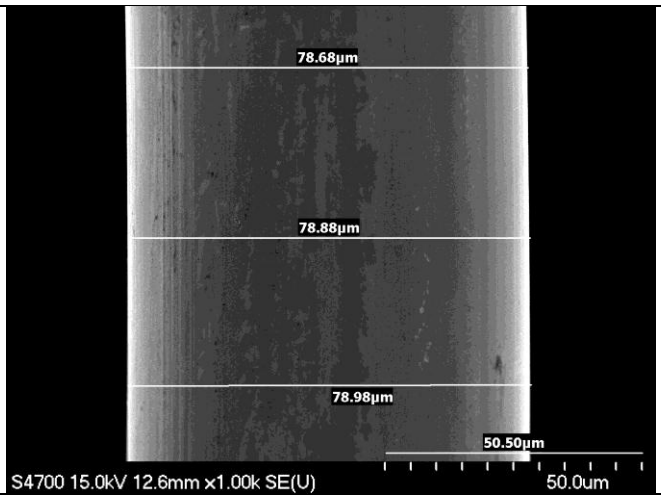
Sample F8-1 A, B

I. Images at designated magnifications

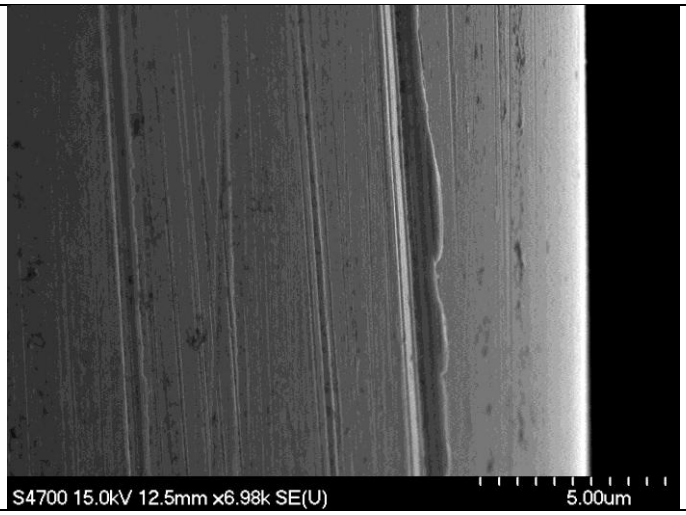
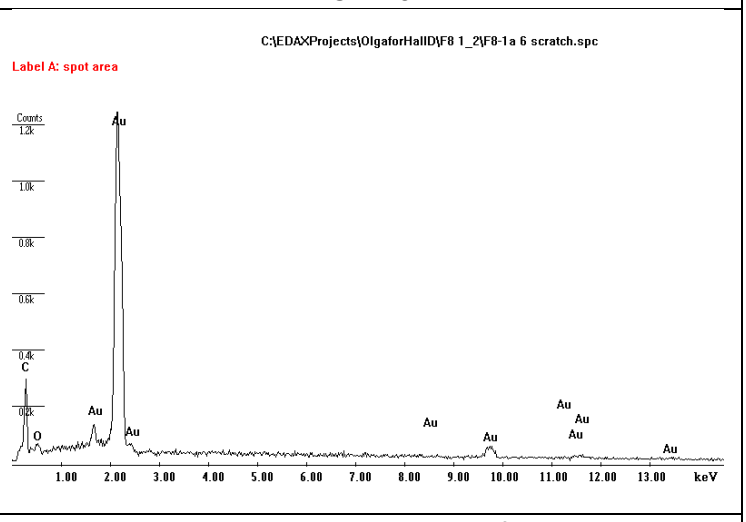
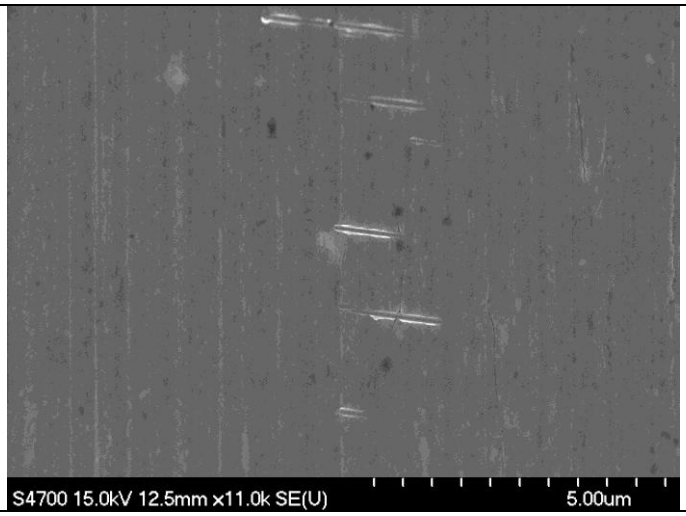
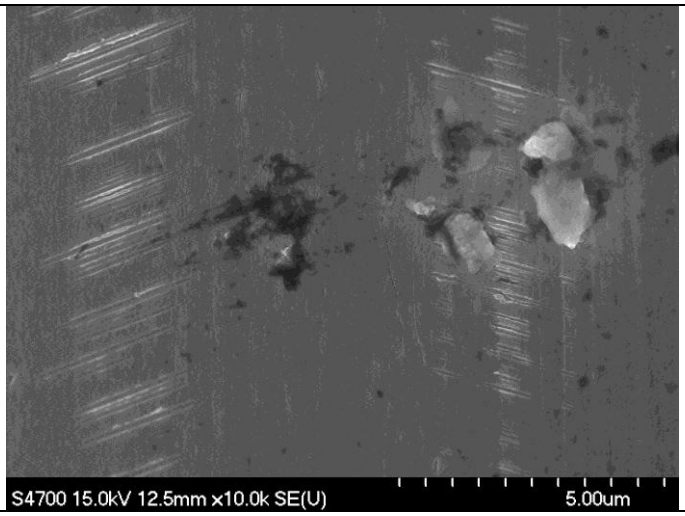
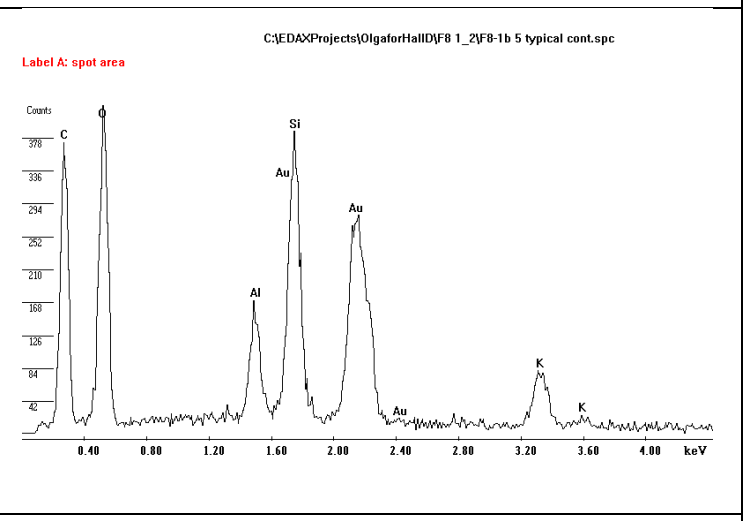
F8-1A-1	F8-1B-1
	
Magnification: 300x	Magnification: 300x
F8-1A-2	F8-1B-2
	
Magnification: 500x	Magnification: 500x

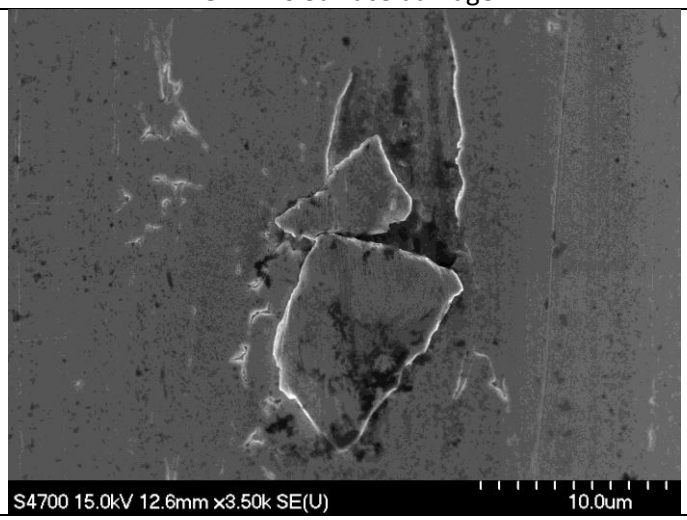
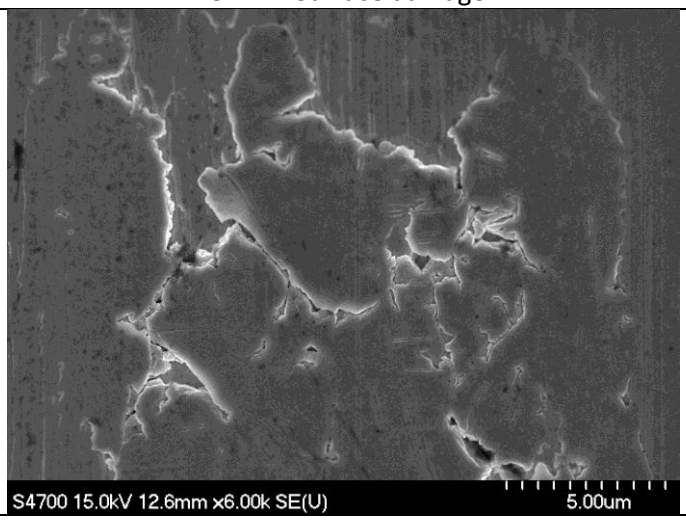
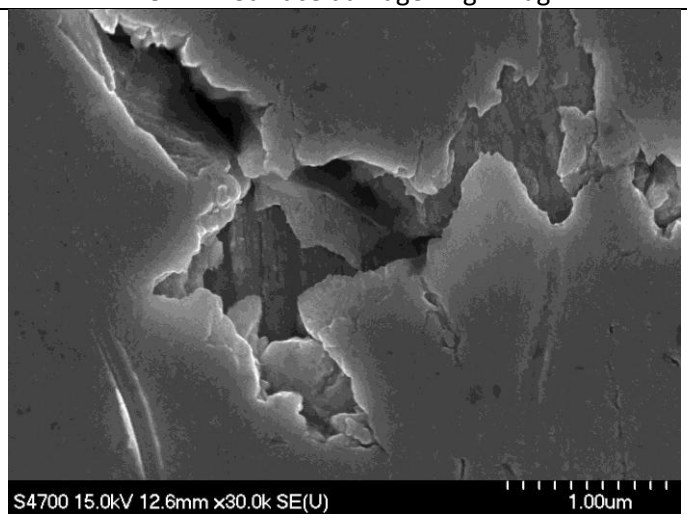
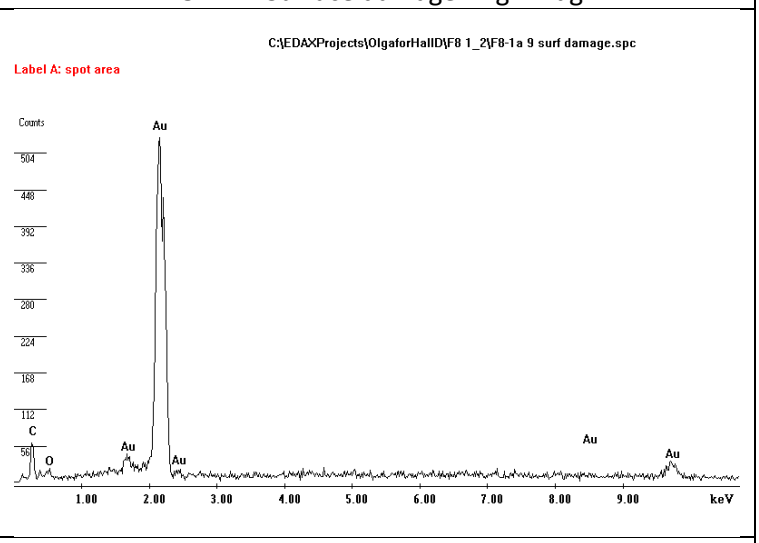
F8-1A-3	F8-1B-3
	
Magnification: 800x	Magnification: 800x
F8-1A-4	F8-1B-4
	
Magnification: 1000x	Magnification: 1000x

II. Ovality Measurements

F8-1A-1o	F8-1B-1o
	
Magnification: 1000x	Magnification: 1000x
F8-1A-2o	F8-1B-2o
	
Magnification: 1000x	Magnification: 1000x
F8-1A-3o	F8-1B-3o
	
Magnification: 1000x	Magnification: 1000x

III. Points of Interest

F8-1A-6	F8-1A-6
	
Magnification: 6980x	EDS Analysis. Scratch. No Cu found.
F8-1A-4 Minor scratches.	F8-1A-8 Scratches and contamination.
	
Magnification: 11000x	Magnification: 10000x
F8-1B-5 Environmental contamination	F8-1B-5 Environmental contamination
	
Magnification: 5990x	EDS Analysis. Typical surface contamination

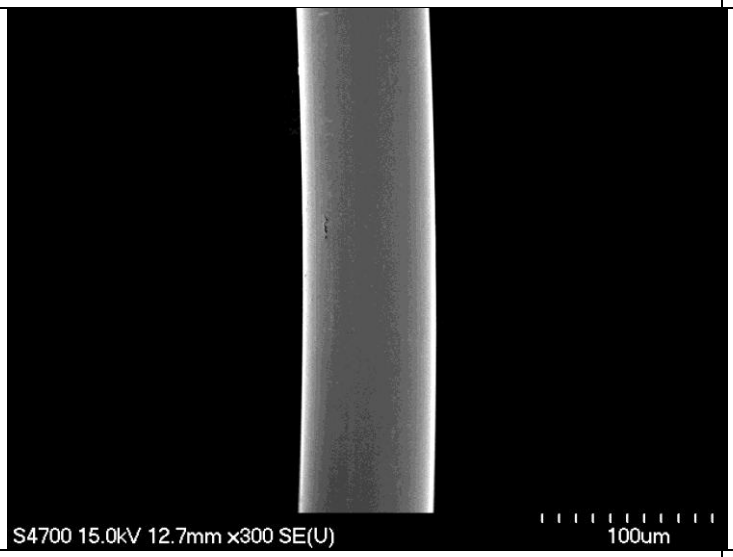
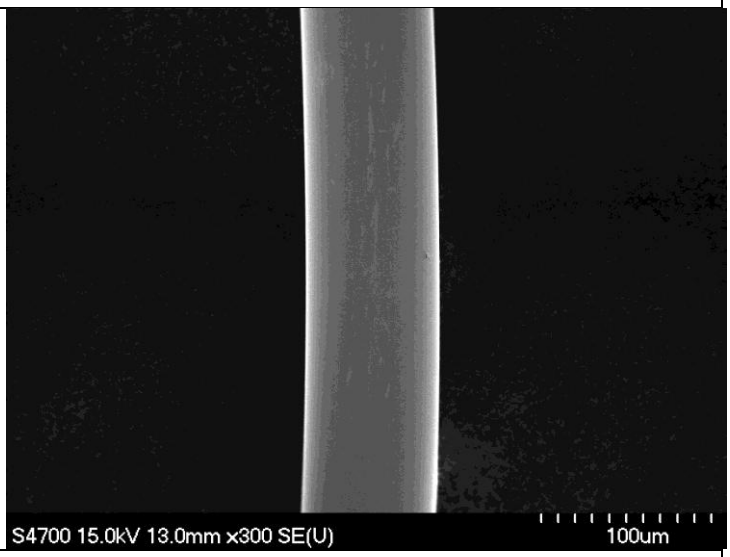
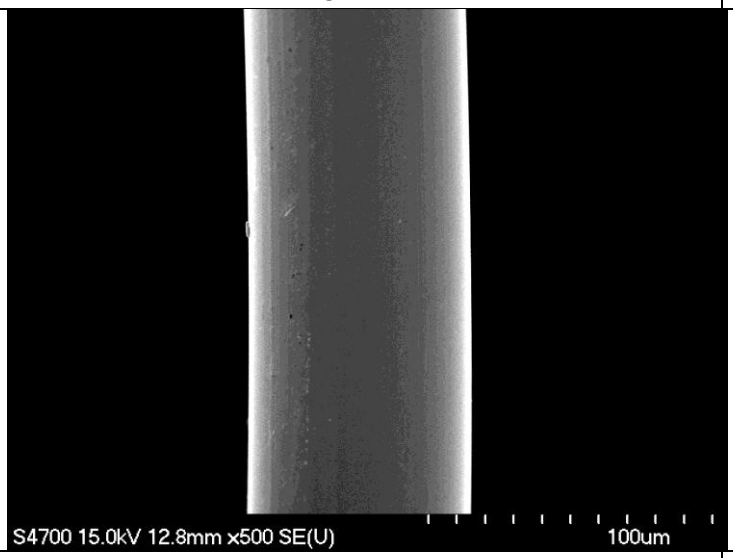
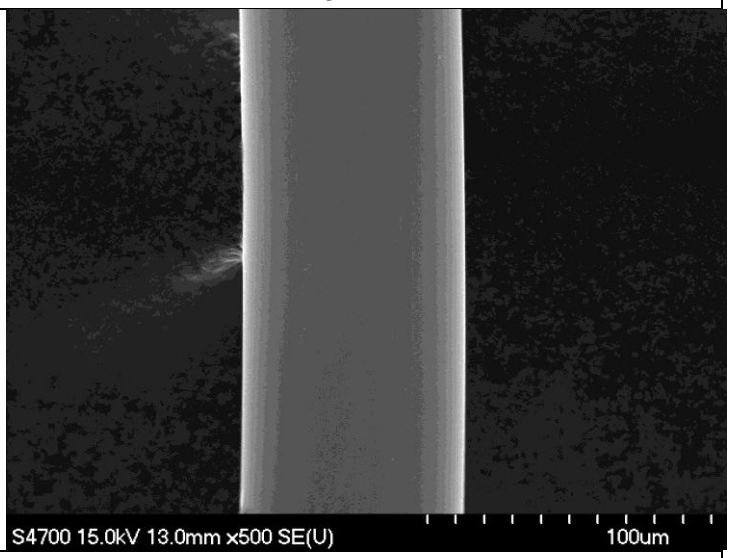
F8-1B-10 Surface damage	F8-1B-7 Surface damage
	
Magnification: 3500x	Magnification: 6000x
F8-1B-7 Surface damage. High mag	F8-1B-7 Surface damage. High mag
	
Magnification: 30000x	EDS Analysis. Surface damage. No Cu found.

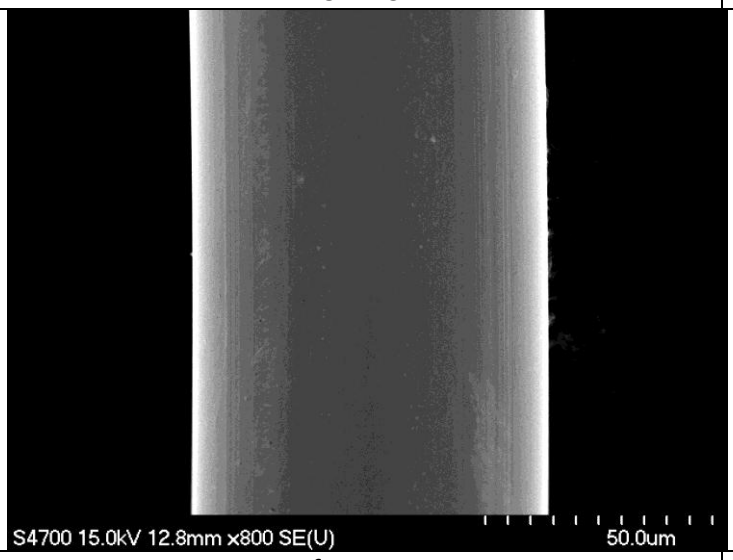
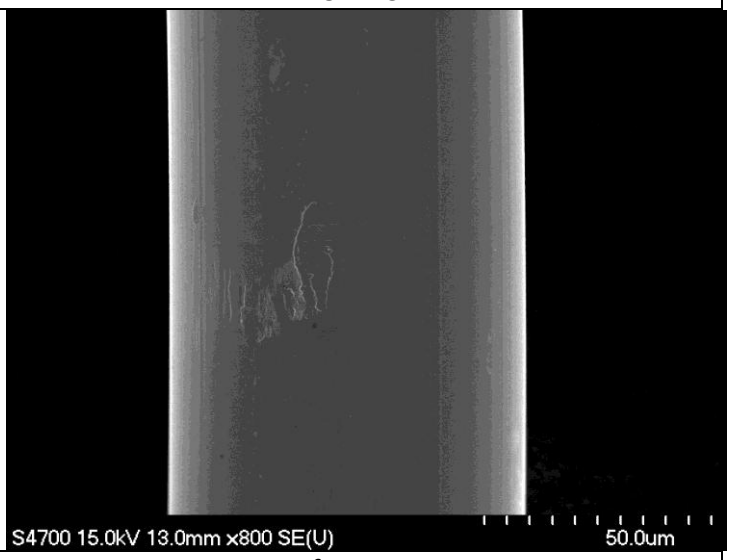
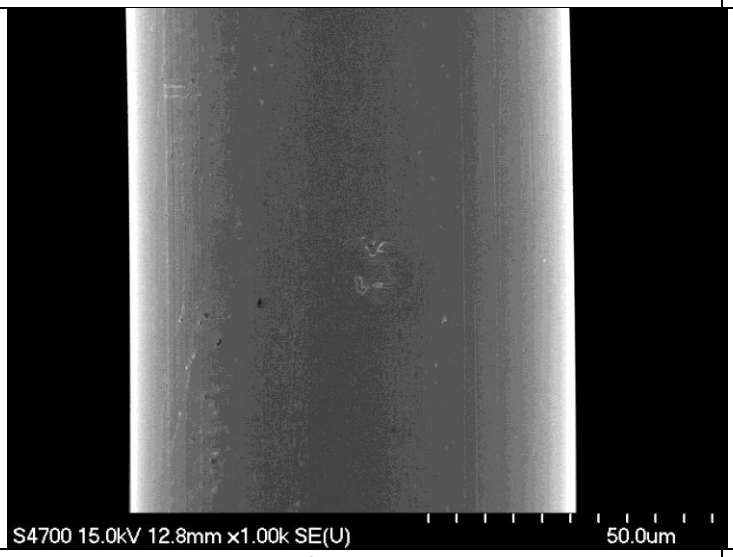
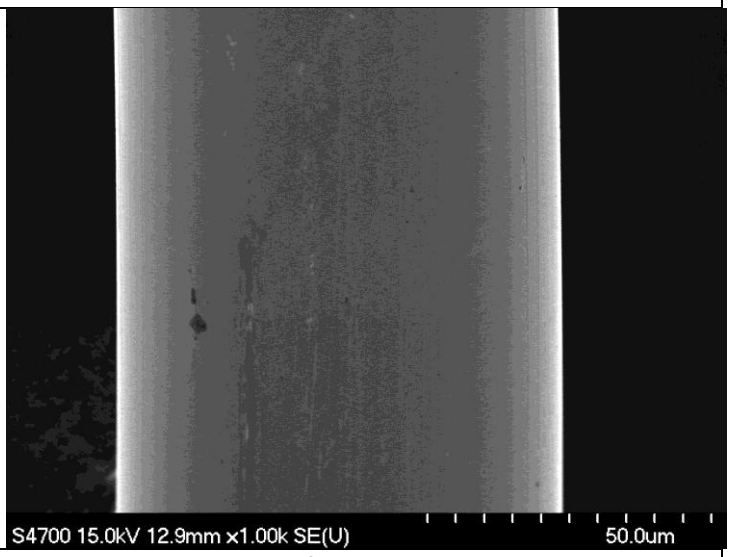
Note:

1) No traces of Cu within the damaged area were indicated by the EDS analysis (detection limit ~1%).

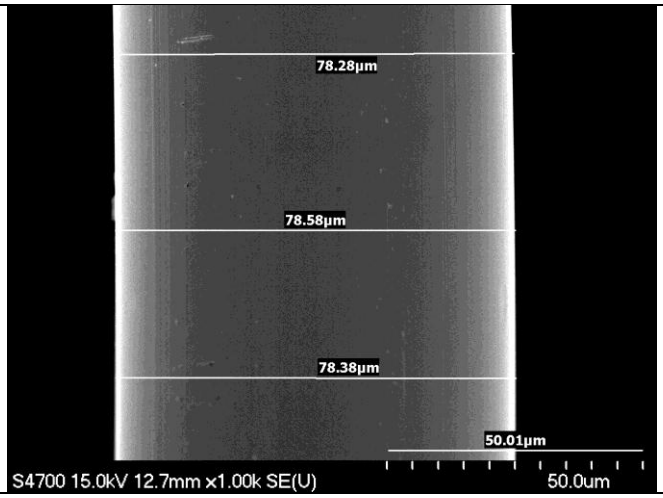
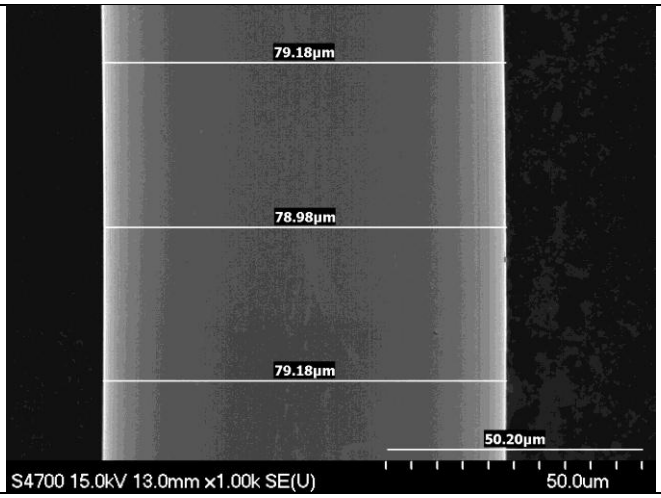
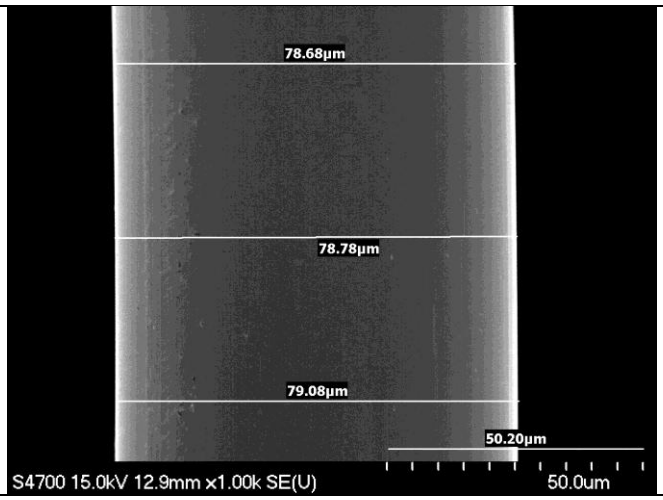
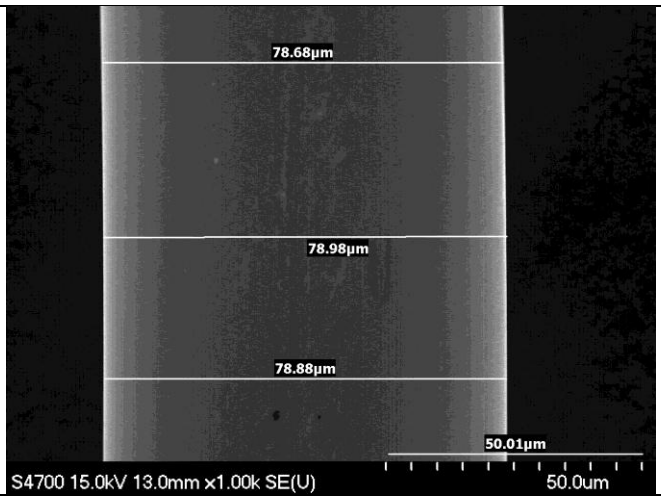
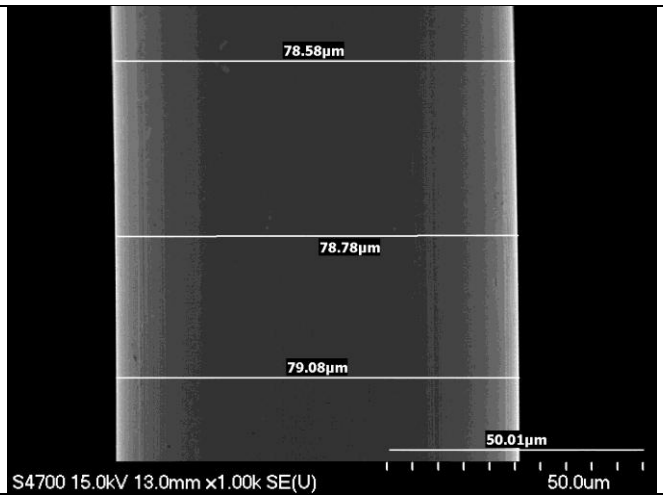
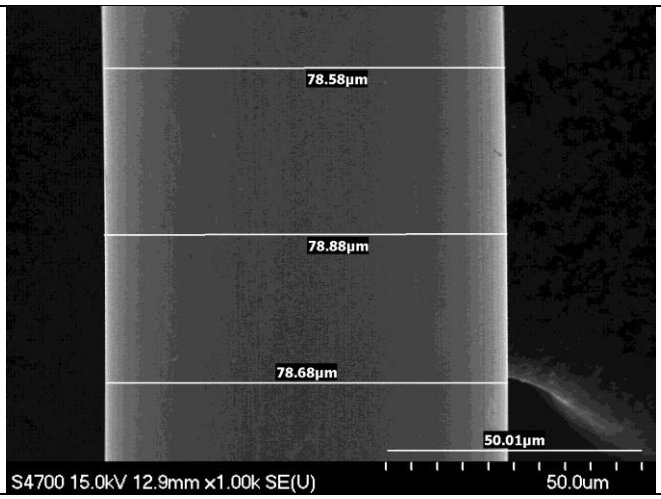
Sample F8-2 A, B

Images at designated magnifications

F8-2A-1	F8-2B-1
	
Magnification: 300x	Magnification: 300x
F8-2A-2	F8-2B-2
	
Magnification: 500x	Magnification: 500x

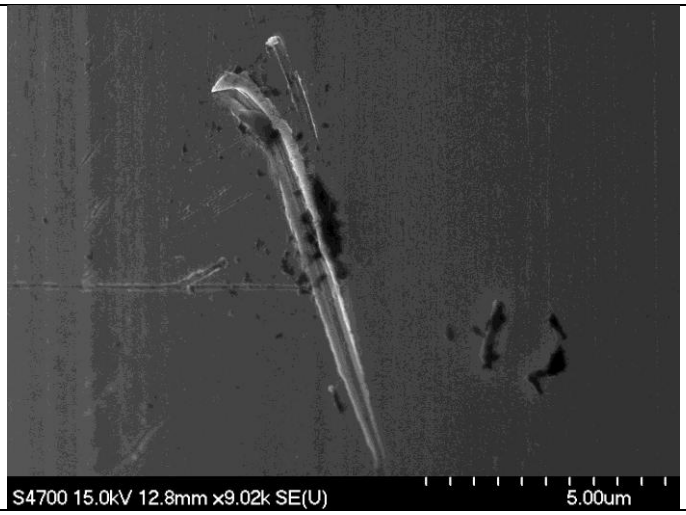
F8-2A-3	F8-2B-3
	
Magnification: 800x	Magnification: 800x
F8-2A-4	F8-2B-4
	
Magnification: 1000x	Magnification: 1000x

II. Ovality Measurements

F8-2A-1o	F8-2B-1o
	
Magnification: 1000x	Magnification: 1000x
F8-2A-2o	F8-2B-2o
	
Magnification: 1000x	Magnification: 1000x
F8-2A-3o	F8-2B-3o
	
Magnification: 1000x	Magnification: 1000x

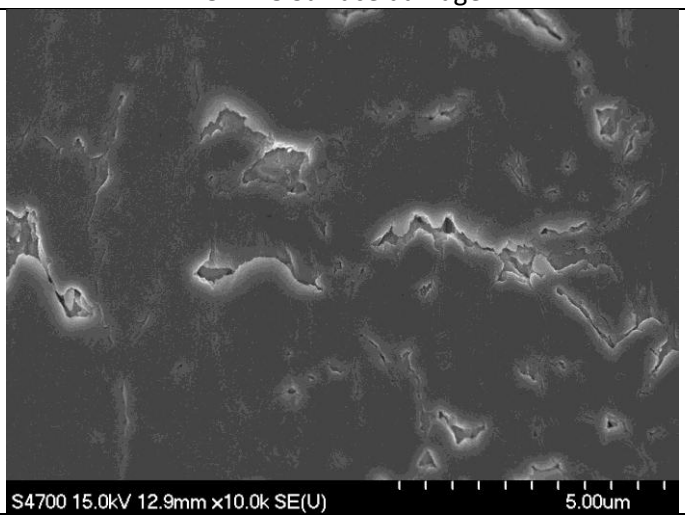
III. Points of Interest

F8-2A-5 Scratch and contamination.



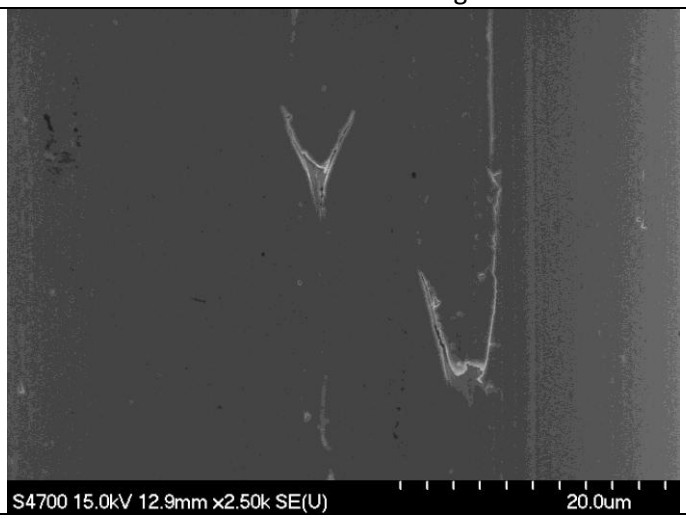
Magnification: 9020x

F8-2A-8 Surface damage.



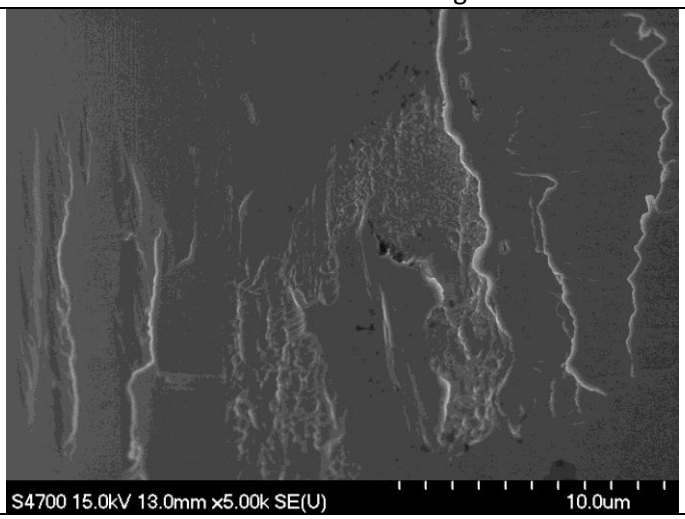
Magnification: 10000x

F8-2B-6 Surface damage.



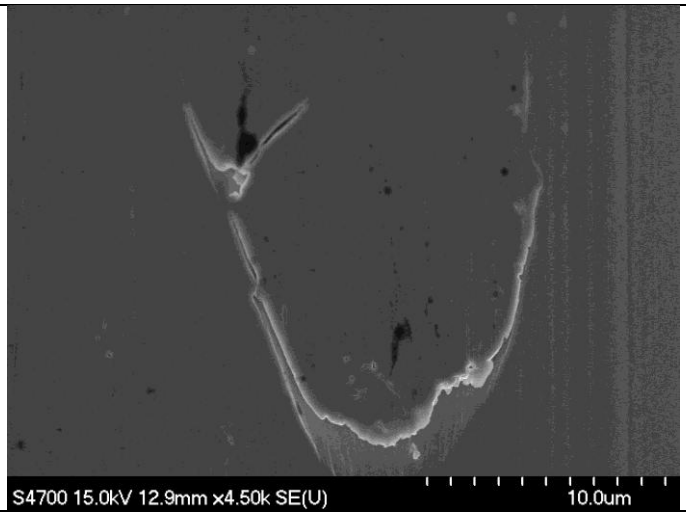
Magnification: 2500x

F8-2B-4 Surface damage.



EDS Analysis. Surface damage. No Cu.

F8-2B-7 Details of surface structure.



Magnification: 4500x