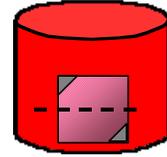


Cross Sectional Preparation of CeO₂ films on NiW substrate

Process Outline:

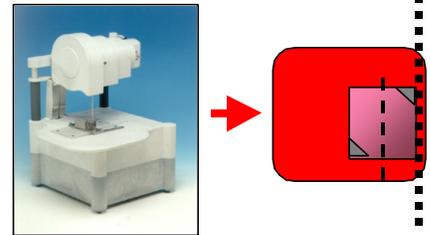
1. Mounting

The specimens were epoxy mounted using the Acrylimet™ cold mounting system.



2. Sectioning

The mounted specimens are sectioned using the Model 865 Diamond Band saw to slightly expose the CeO₂-NiW specimen.



3. Fine Grinding

After sectioning the specimen mounts were ground using a semi-automated system consisting of the Model 150 lapping fixture & Model 920L semi-automated polishing machine. Parameters & consumable utilized are:

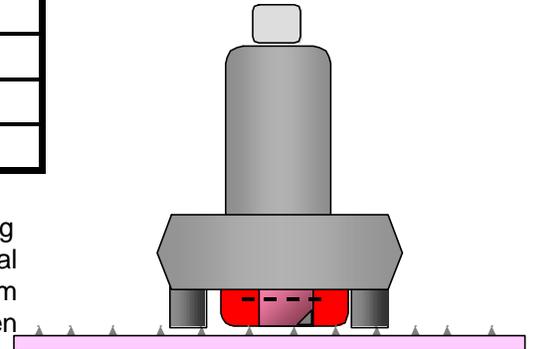
Abrasive	Lubricant	Platen Speed	Time (min)
30um Al ₂ O ₃ film	H ₂ O	150-200	until planar
15um Al ₂ O ₃ film	H ₂ O	150	3-5
3um Al ₂ O ₃ film	H ₂ O	150	2-3
1um Al ₂ O ₃ film	H ₂ O	60-100	2-3



Model 920L w/ Model 150L lapping fixture

4. Final Polishing

Once the cross sectional area is met with fine grinding on 1um Al₂O₃ film, the specimen is ready for final polishing on a ChemoTex™ 2000 cloth with 1um MicroDi™ Poly-Diamond Suspension for five to ten minutes.



5. Ion Beam Etching

The final step in the specimen preparation process is to remove any damage introduced during the previous final polishing step. Ion beam etching is utilized to clean up the polished cross section. The advantages of ion beam etching is avoidance of harsh chemicals, site specific, low damage, controlled removal rates, topographic or material specific removal. The following parameters were used:

Sample #	High Voltage	Gun Current	Angle	Time
1. L25	6kV	3mA	30	25min
2. L26	6kV	2mA	10	27min

