Science & Technology Facilities Council
ASTeC

ARIES

ARIES WP 15.3 Progress

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SC coating set up

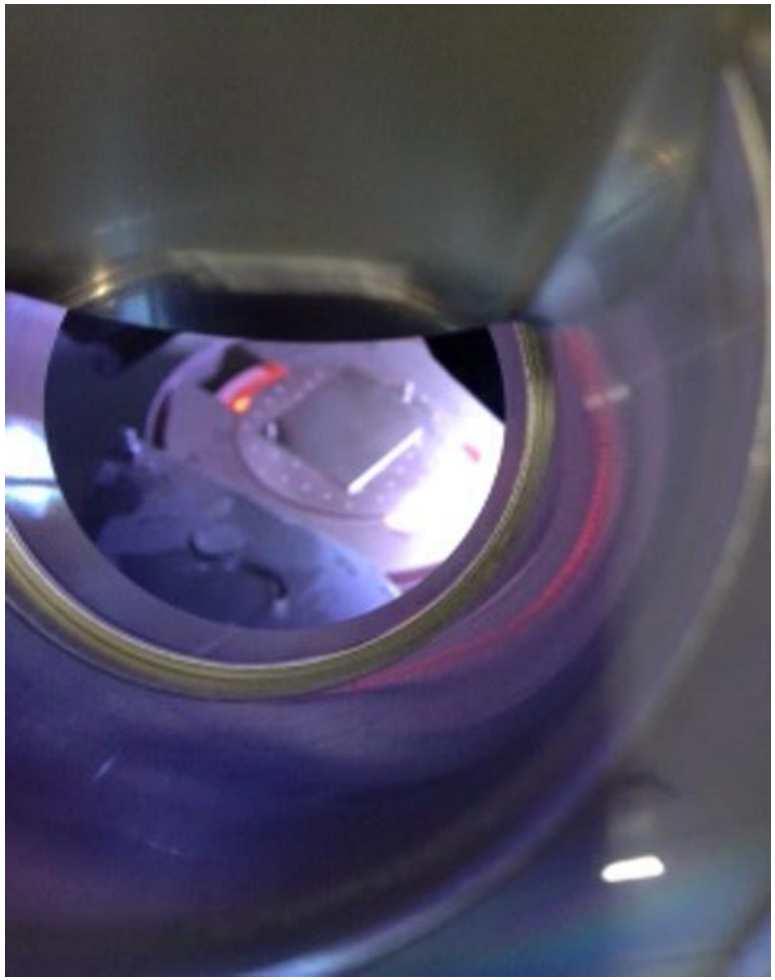
- **Magnetron sputtering from a RRR 300 Nb target**
- **Substrate Temperature, Deposition Rate, Deposition Thickness , Substrate Bias, Concurrent Ion Bombardment can be varied independently.**
- **Total of 4 EP Copper sample is loaded into the load lock and system fully Baked.**

Sample handling procedure

1. Unpacking of Sample and directly installing it onto the substrate plate.
2. Substrate plate were placed into the load lock (total of five) and load lock evacuated.
3. Deposition chamber and the load lock was baked at 150 C for three days and base pressure of $2x10^{-10}$ mbar was achieved.
4. The sample plate was loaded into the deposition chamber and the sample was heated to 650 C for 12 hours.
5. Kr gas was introduced into the chamber and at the same time the pumping speed reduced via butterfly valve.
6. Target was sputtered cleaned for 5 min.
7. Subtracted was deposited without any interruption for 8 hours.
8. Cool down over night
9. Sample transferred to load lock and new sample was placed in deposition position.
10. Sample were taken out of the load lock once all the samples were deposited.
11. Samples are cut according to predetermined sizes using water Jet.
12. Rinsing the pieces in ethanol then in distilled water and dry-blow.
13. Packing in membrane film boxes for shipping.

SC Nb deposition Cu Substrate

Substrate heated 650 C for 12 hours
Deposition Temperature 650 C
DC Magnetron
Deposition Power: 400W
Current: 0.97A Voltage: 411V
Base pressure: 10^{-10} mbar
Deposition pressure (Kr): $2x10^{-3}$mbar
Target / Substrate distance = 10 cm
Substrate rotation at 4 rpm
Substrate kept at ground potential



SC Nb deposition Cu Substrate

- Samples C7, L13, L18, L19 and L4 were Coated with 3 μm thick Nb films
- Sample are being cut and will be analysed with
  - SEM (planar and X-section)
  - XRD
  - EDS