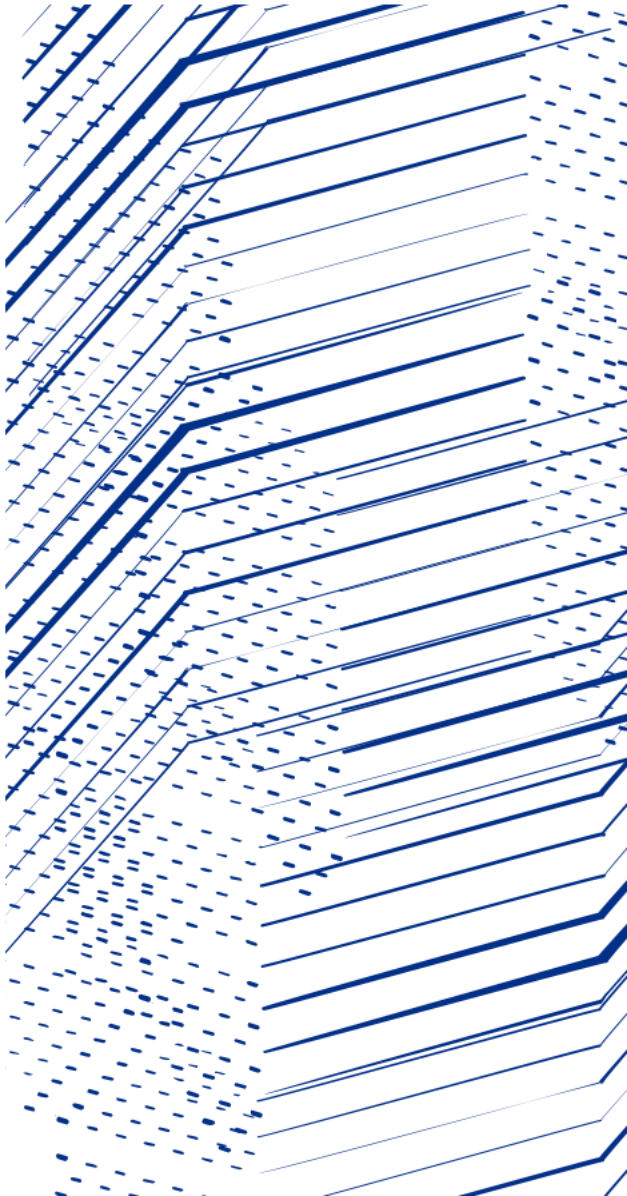
Science and Technology Facilities Council

6th IFAST WP9 Meeting

iFAST

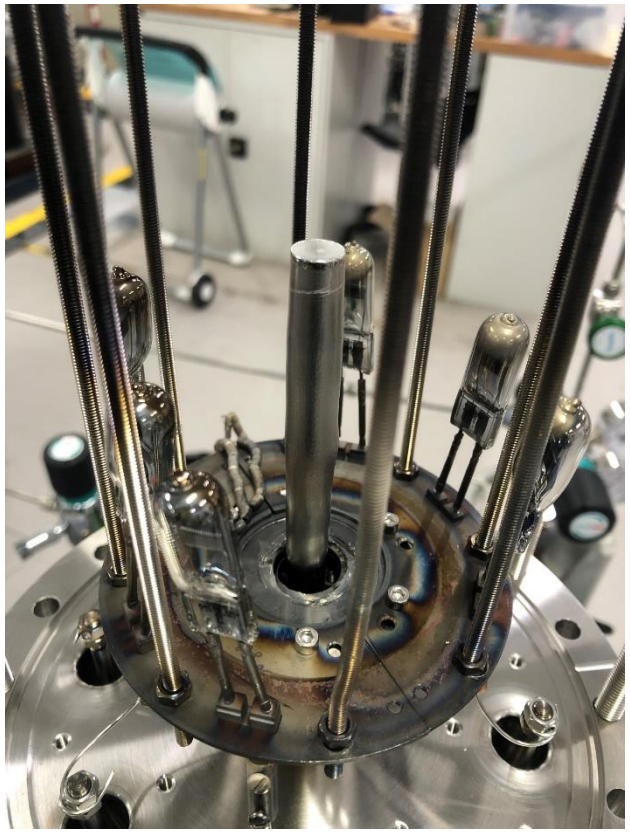


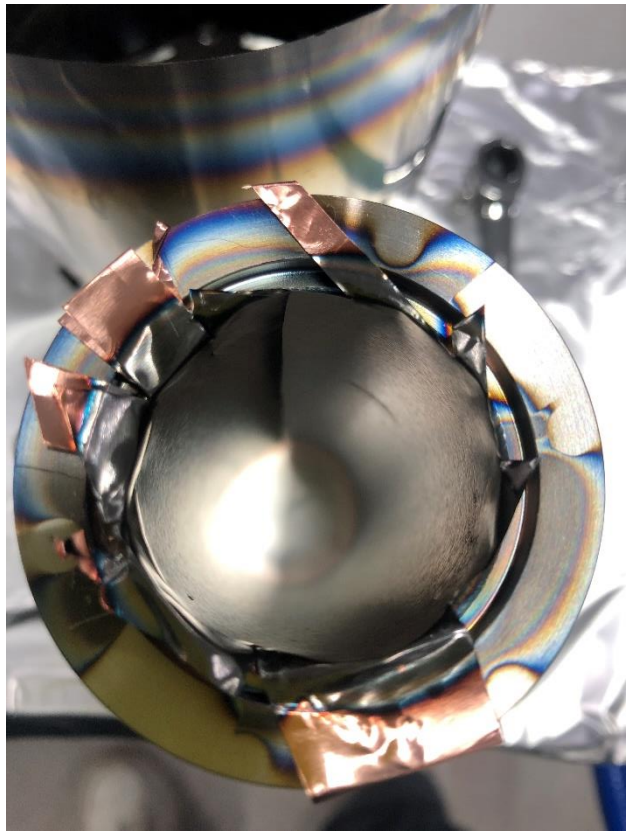
6 GHz Cavity deposition

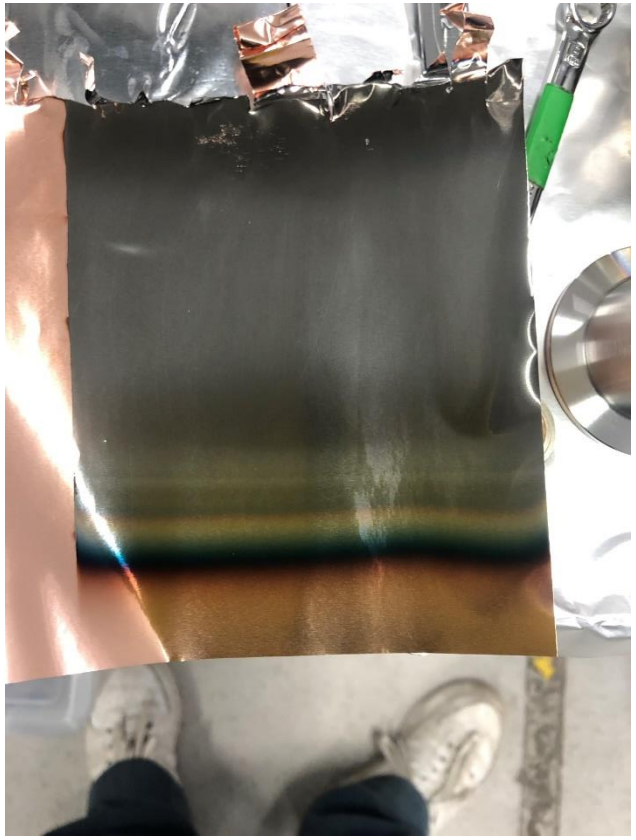
Close Cavity

Open cavity

Nb deposition using coil magnet





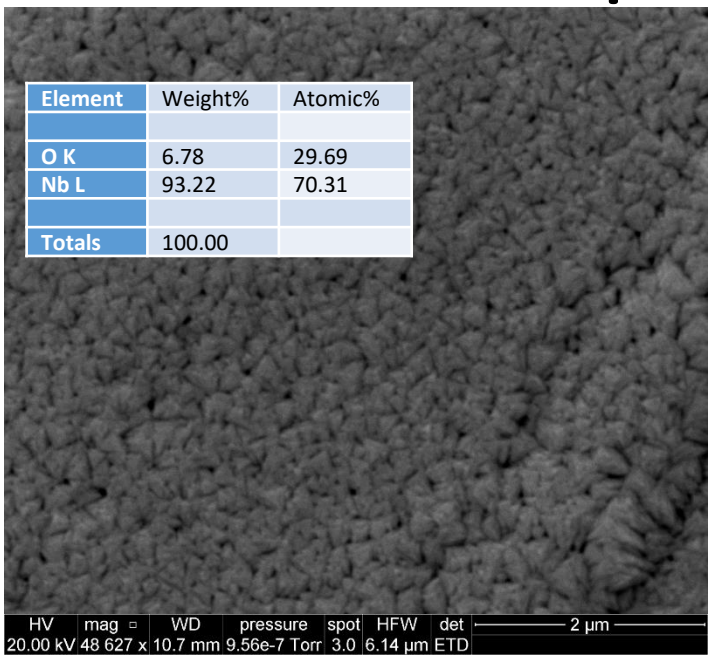


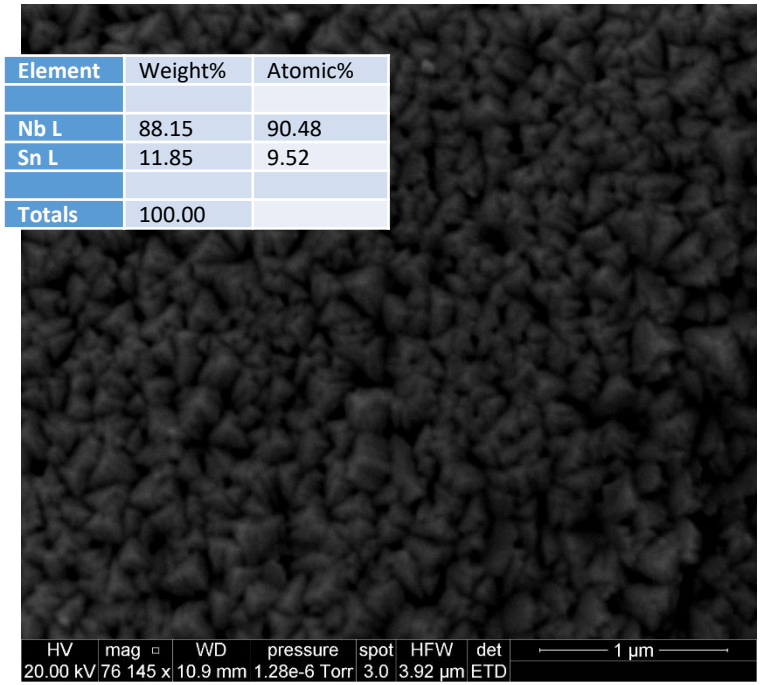
Deposition parameters:
Power 100W
Current 0.22A
Voltage 453V
Dep Temp room Temp

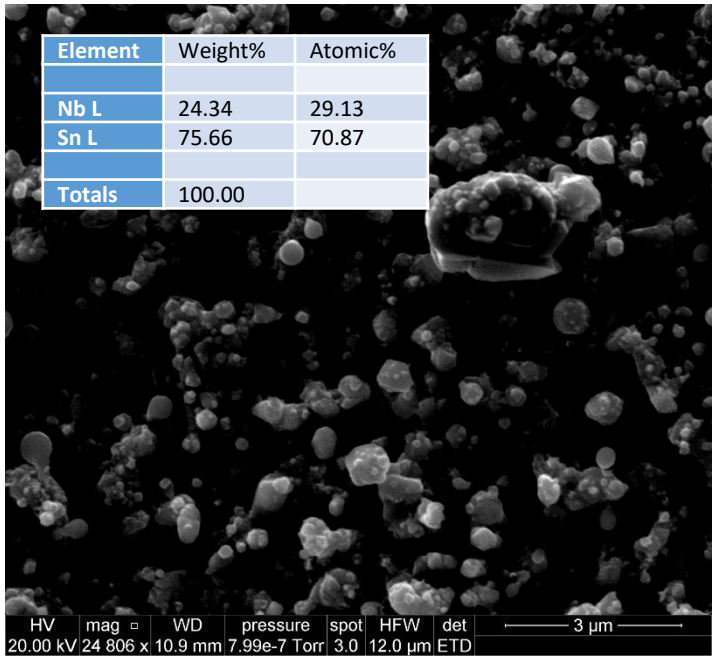
DC
Deposition time 1 hour
Dep pressure 2 x10^{-2} mbar

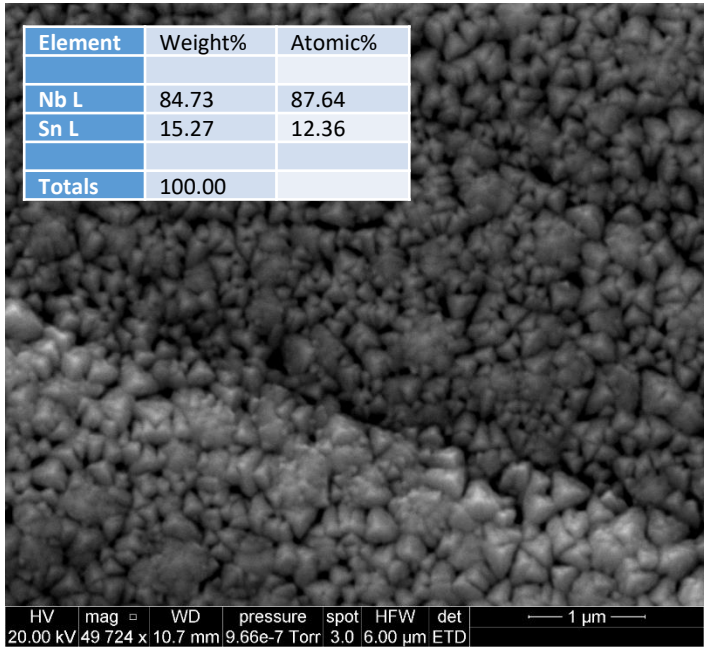
mag current 4.0A

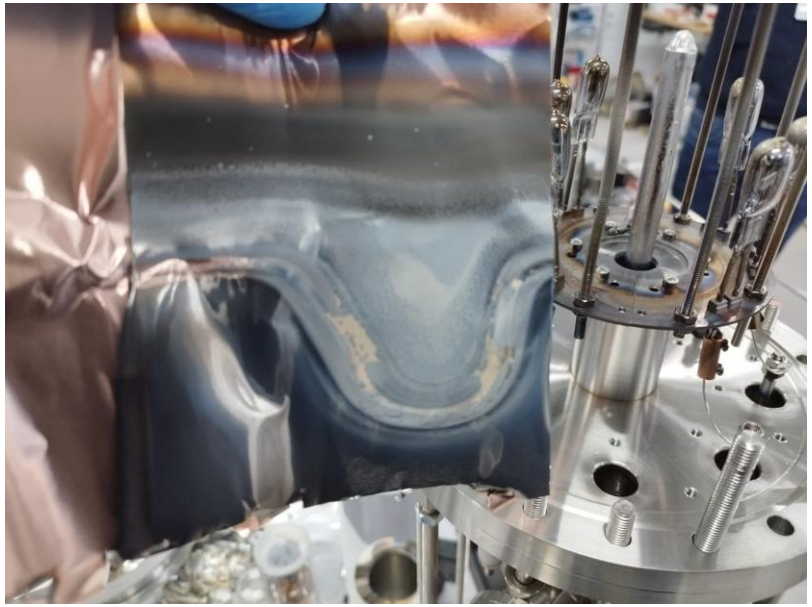
Nb3Sn deposition with Nb tube and Sn wire inside

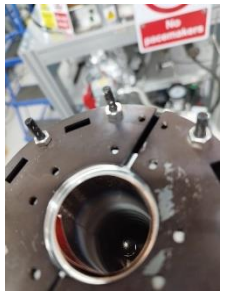


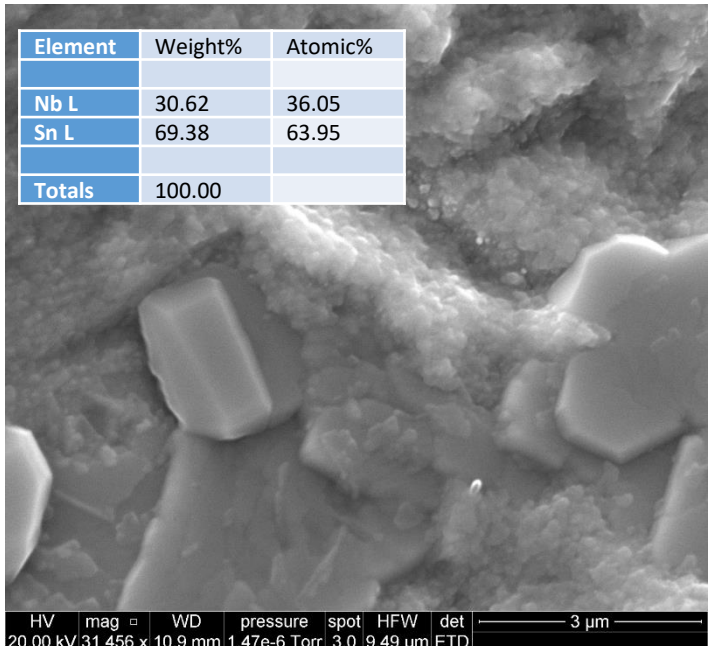




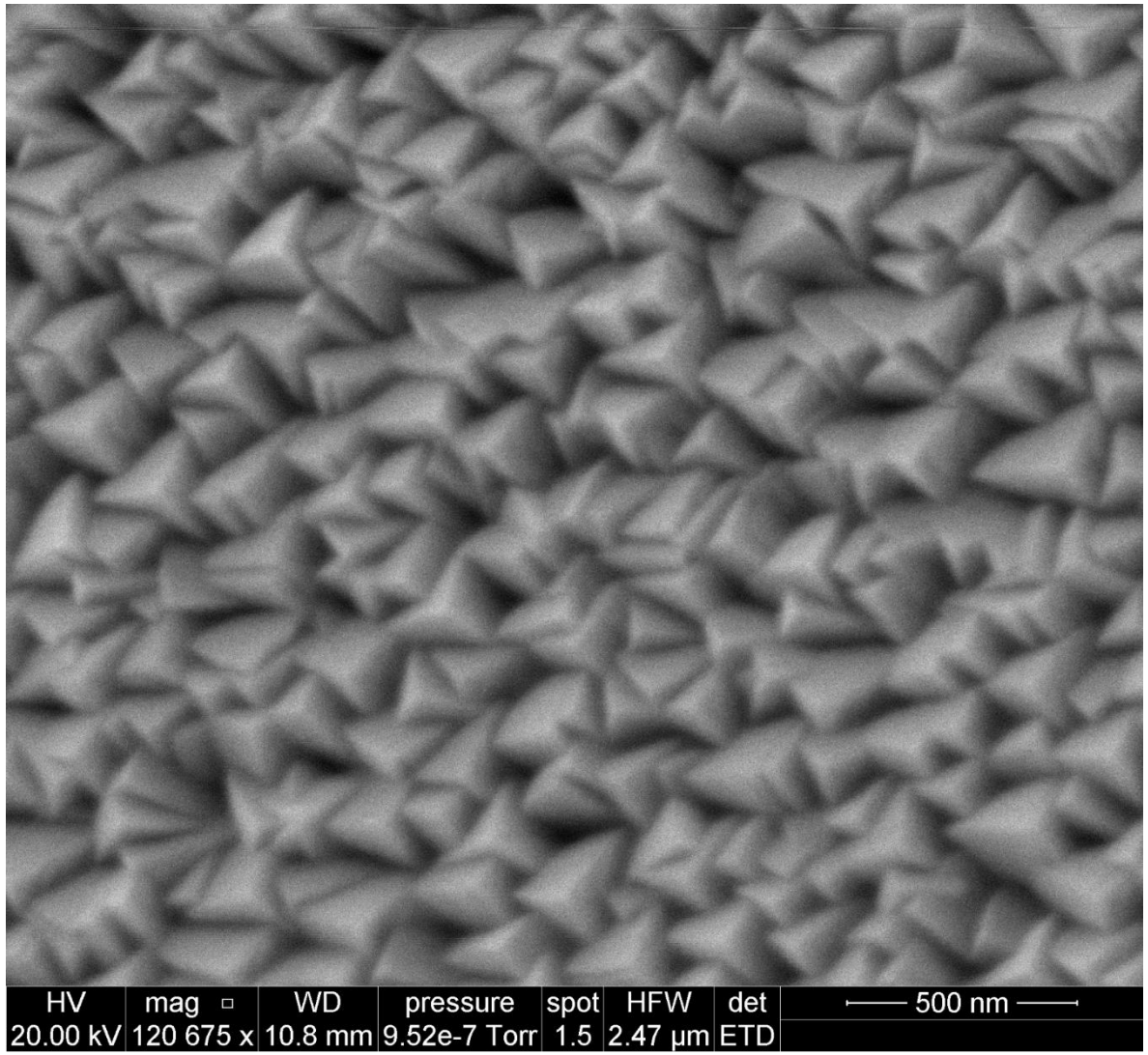


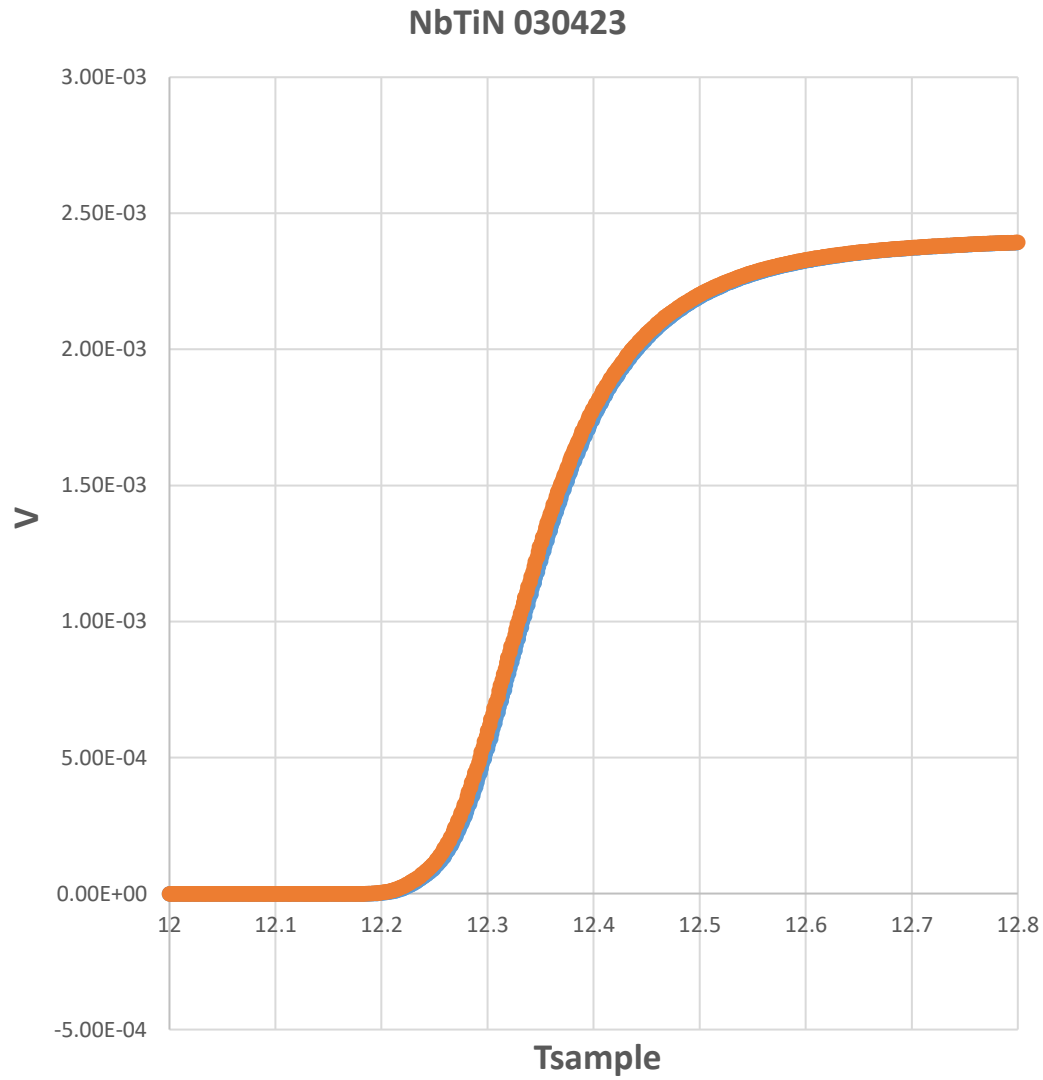




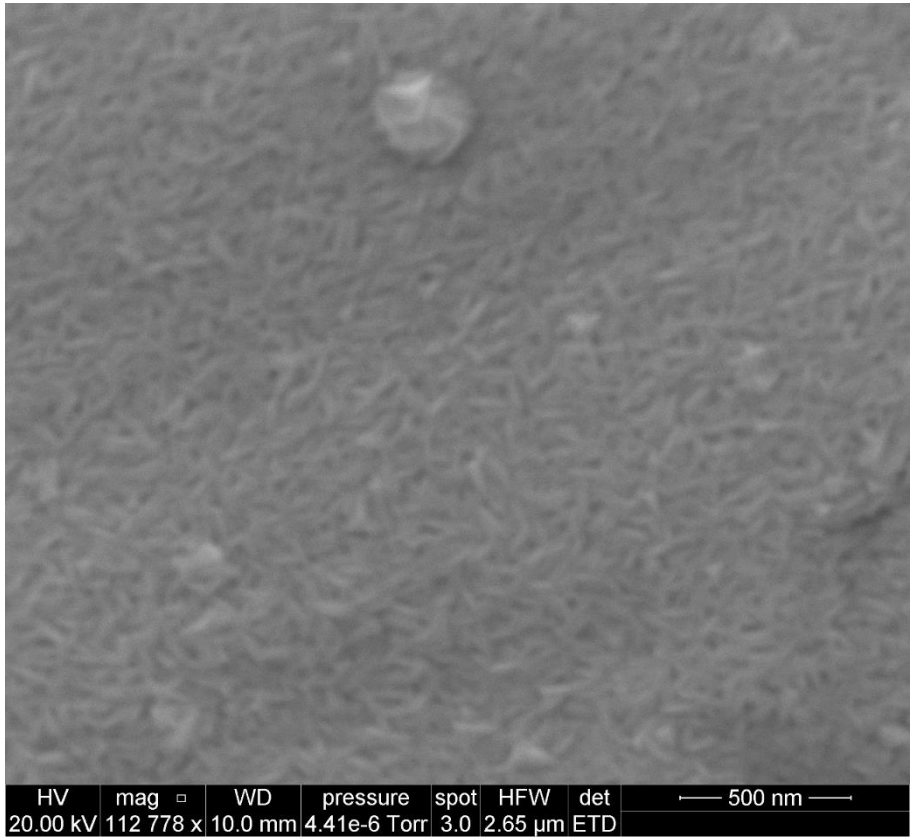


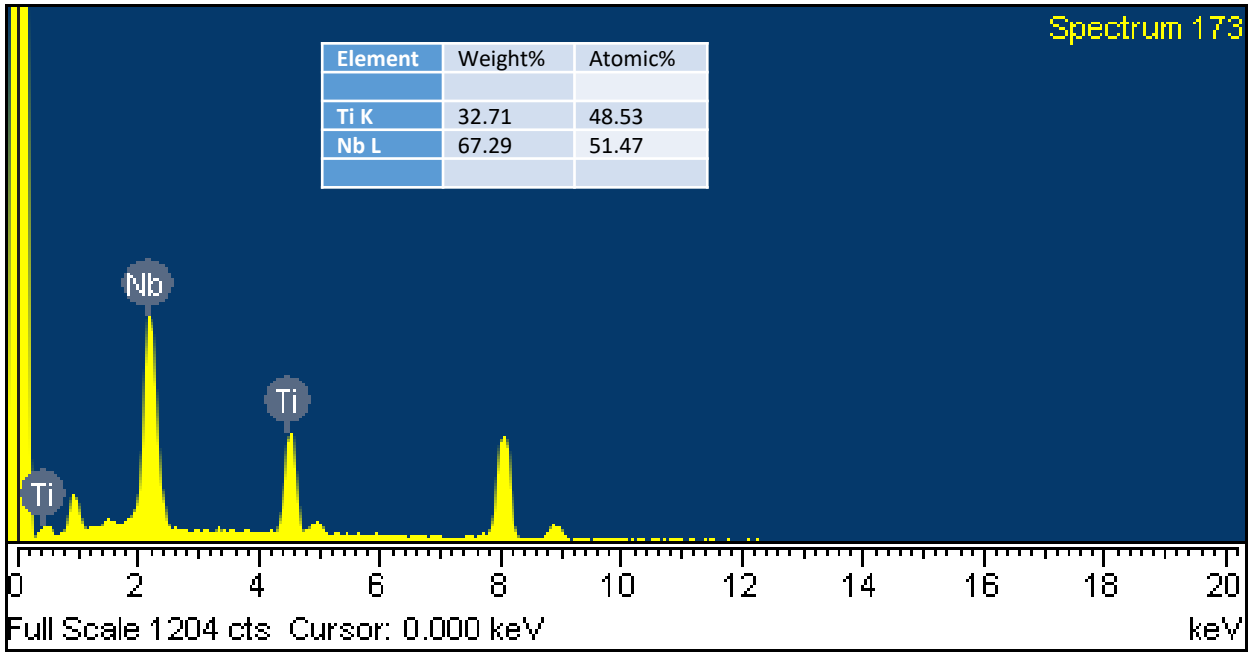
NbTiN deposition using $Nb_{37}Ti_{63}$ rod





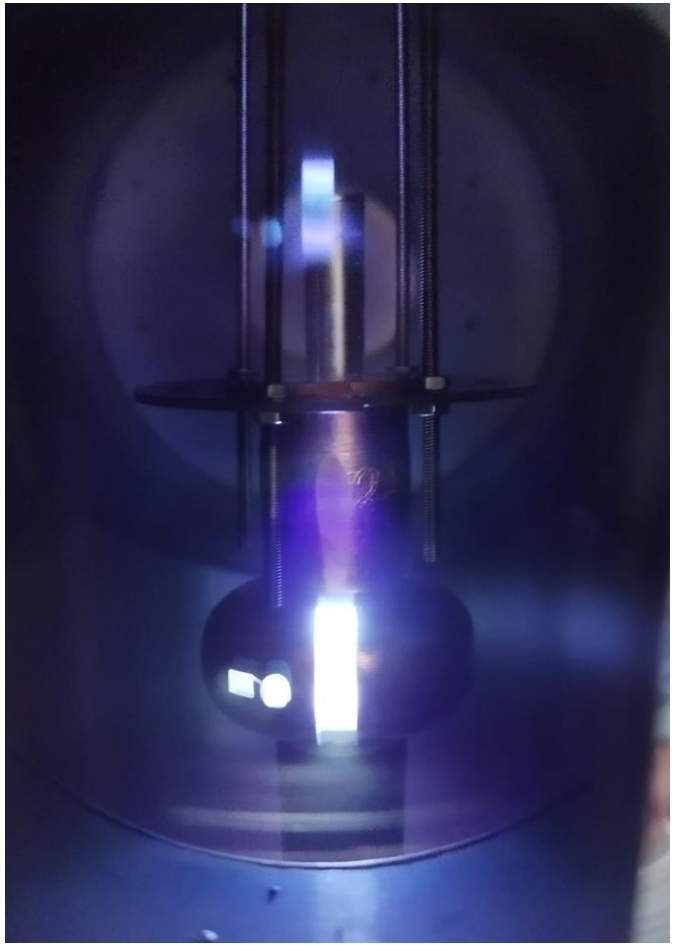
NbTiN deposition using Nb rod wrapped with Ti wire



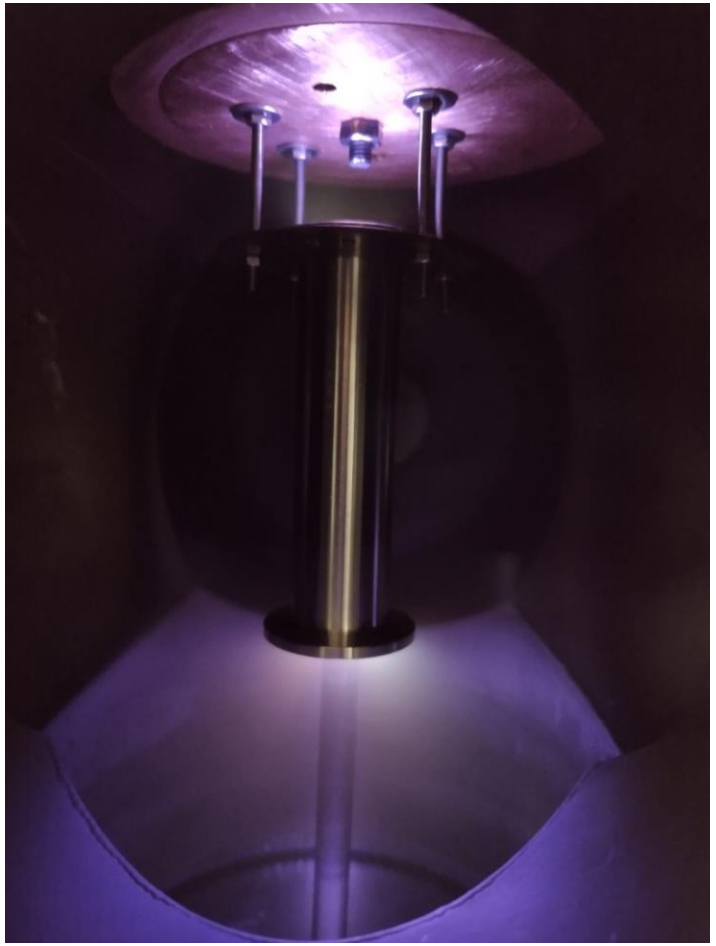


The ratio of Nb to Ti can be adjusted for optimum performance stoichiometry

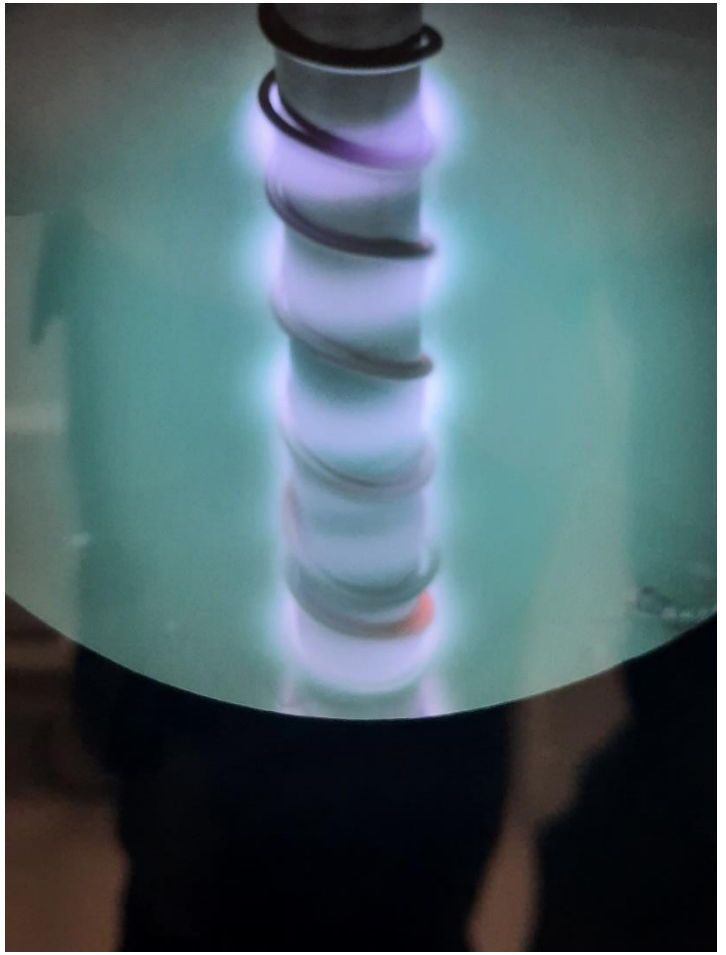
Nb/NbTiN using permanent magnet magnetron



Close cavity

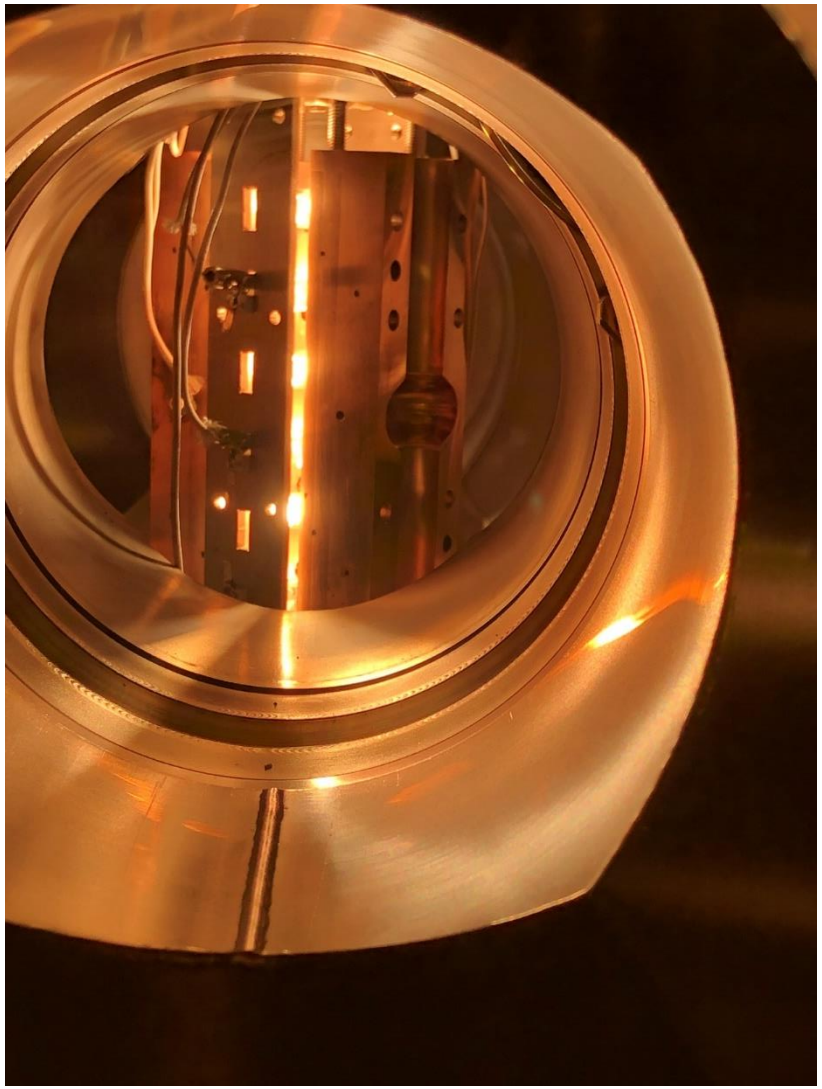


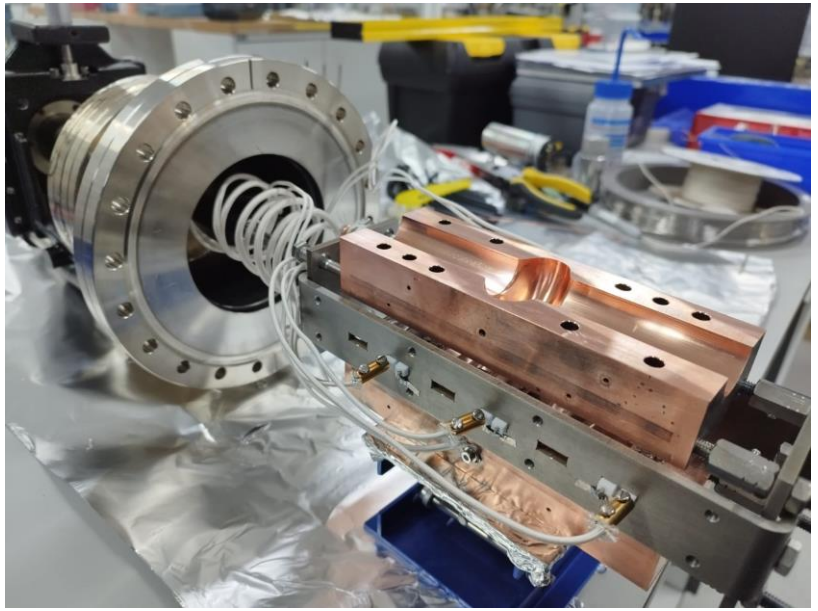
Tube



For A15 and B1 superconducting deposition

6 GHz open cavity heating stage

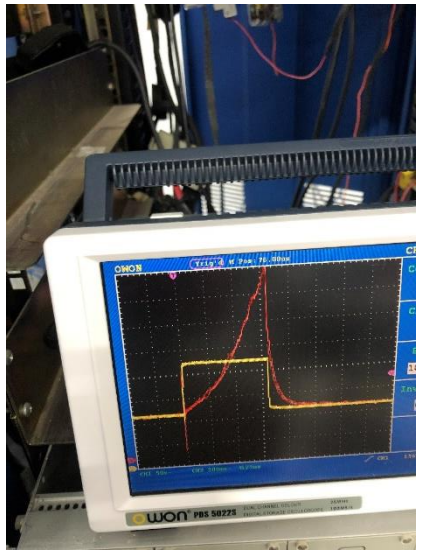


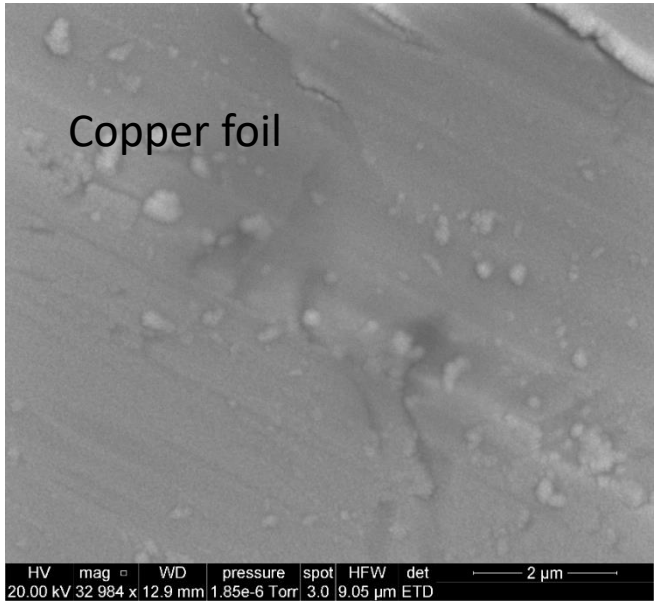


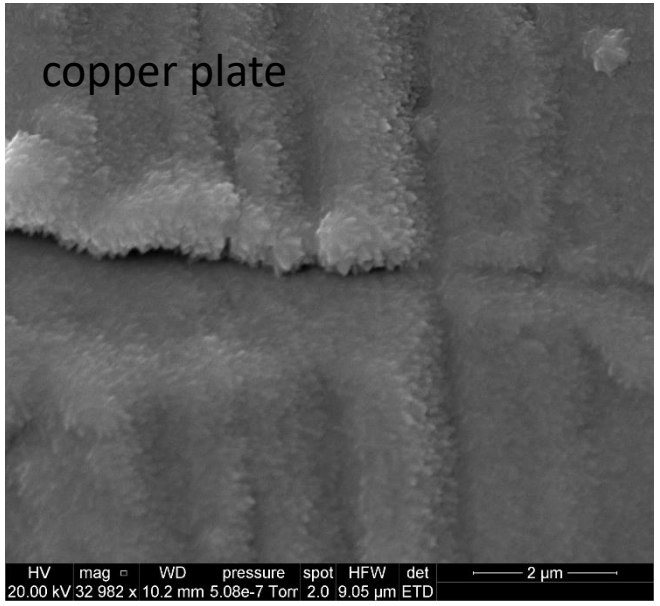
Without any heat shield the cavity temperature reaches to 600 C

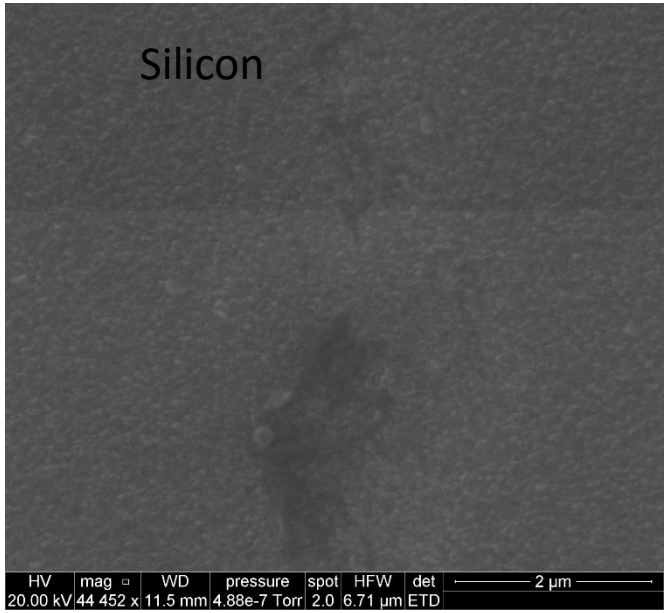
1.3 GHz cavity

HIPIMS dep of Nb on half cell 1.3 GHz cavity RT

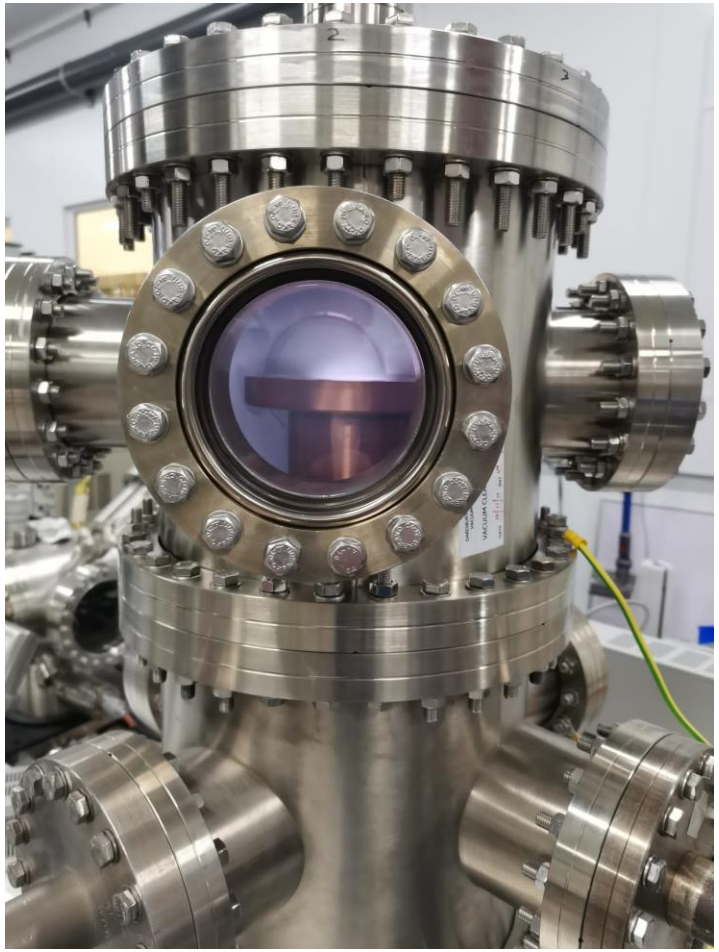


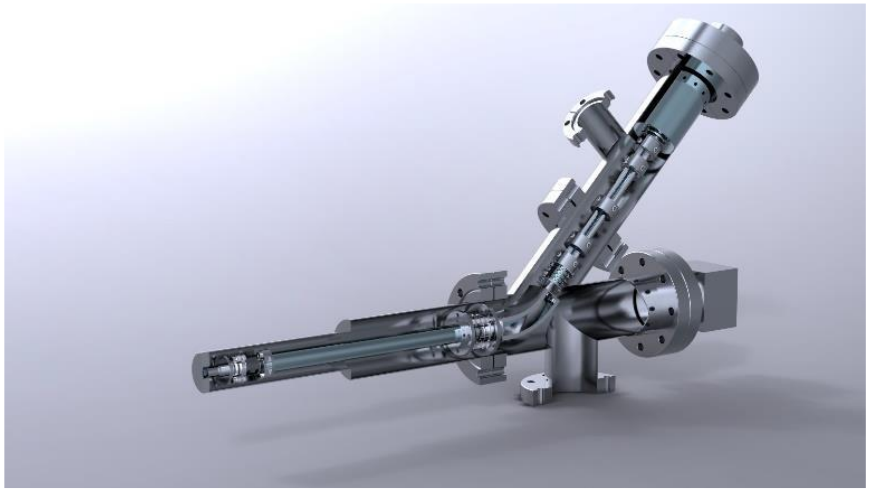




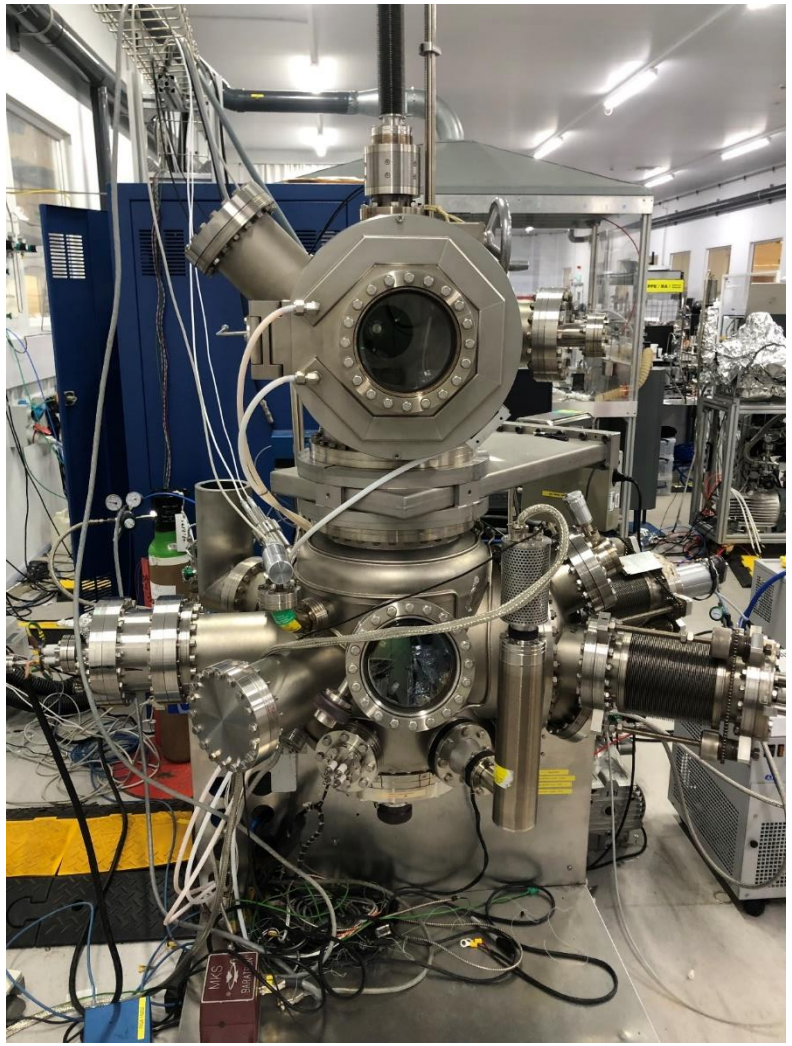


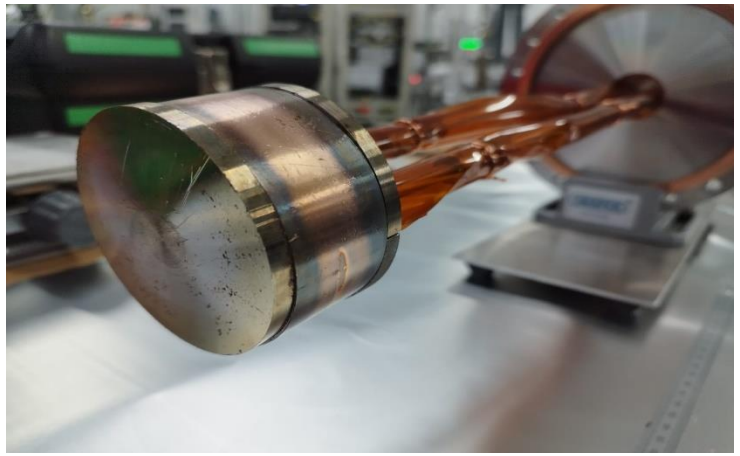
Plasma diagnostic study with Liverpool University





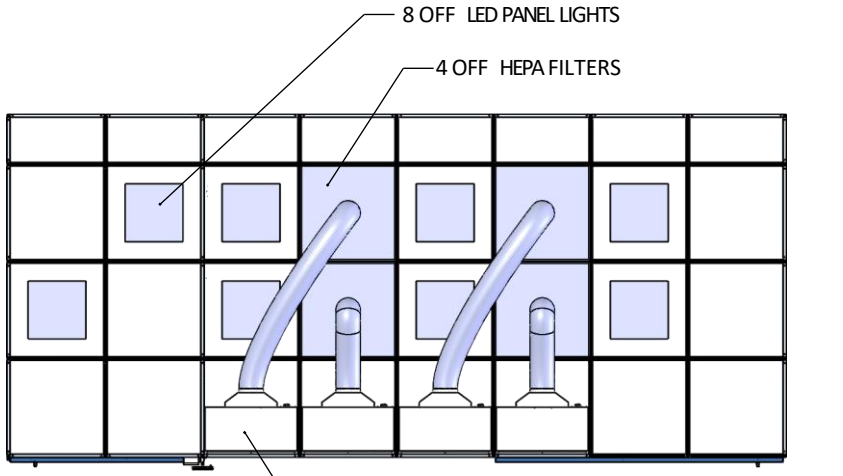
1.3 GHz Cavity deposition system

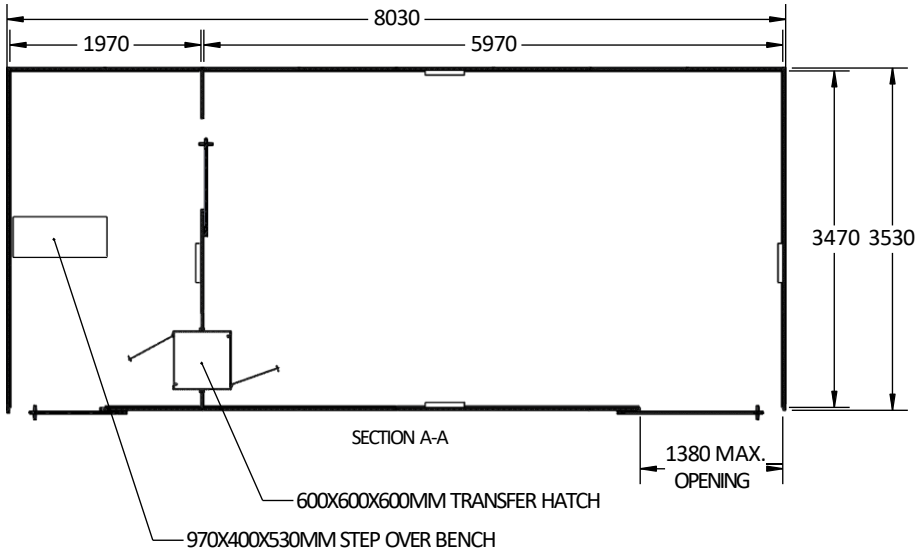


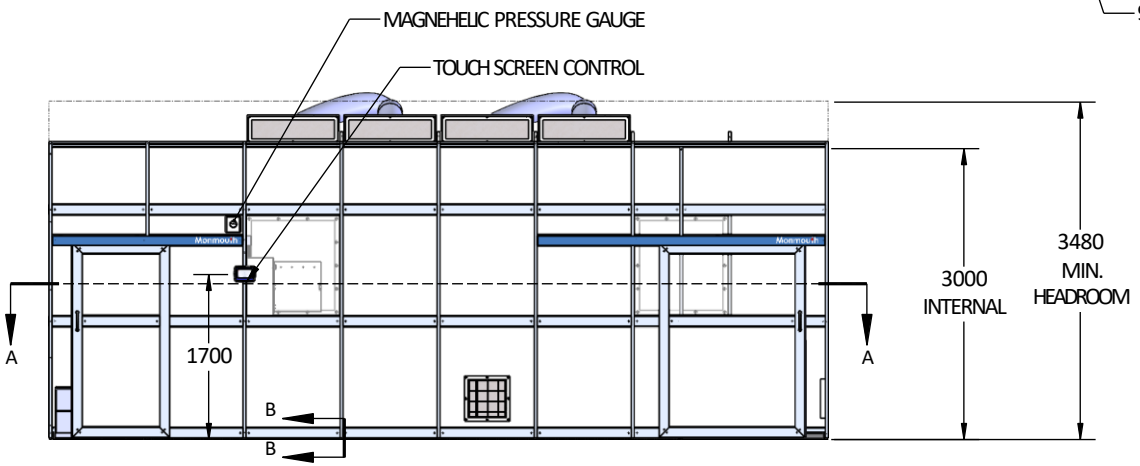


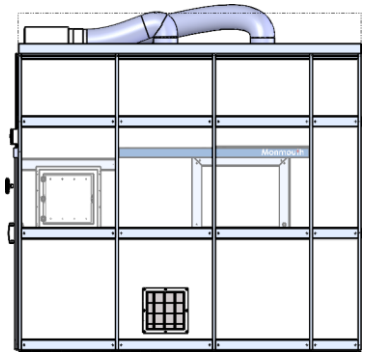
The system is equipped with load lock chamber, rotating arm that can turn and move up and down, the chamber wall is water cooled, fixed magnetron in the centre.
It will be positioned in an ISO 6 clean room with ISO 4 cabinet for final cavity preparation.

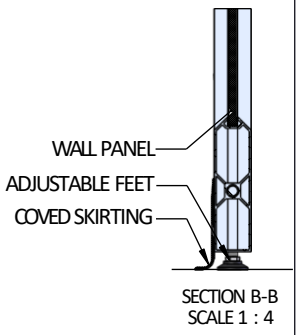
A3L











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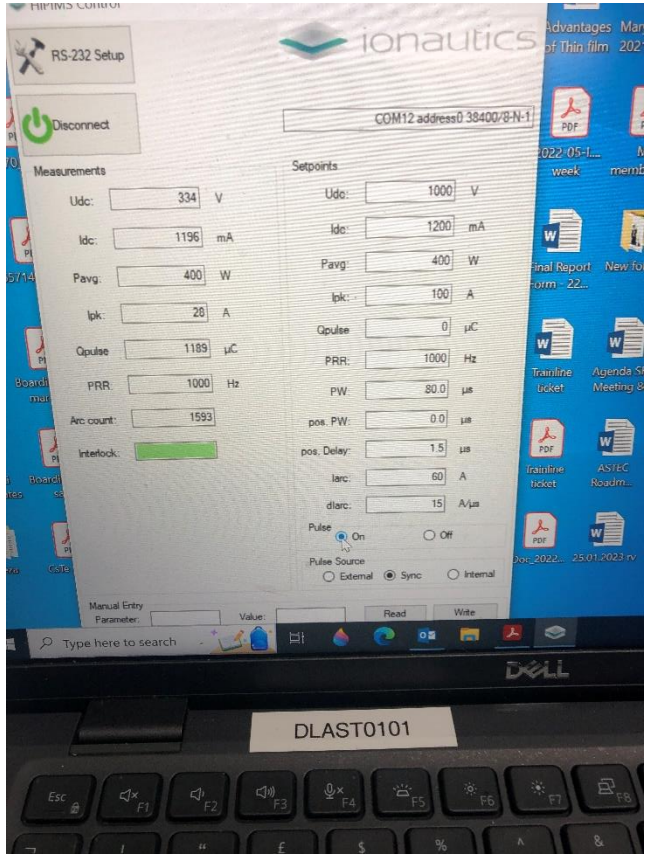
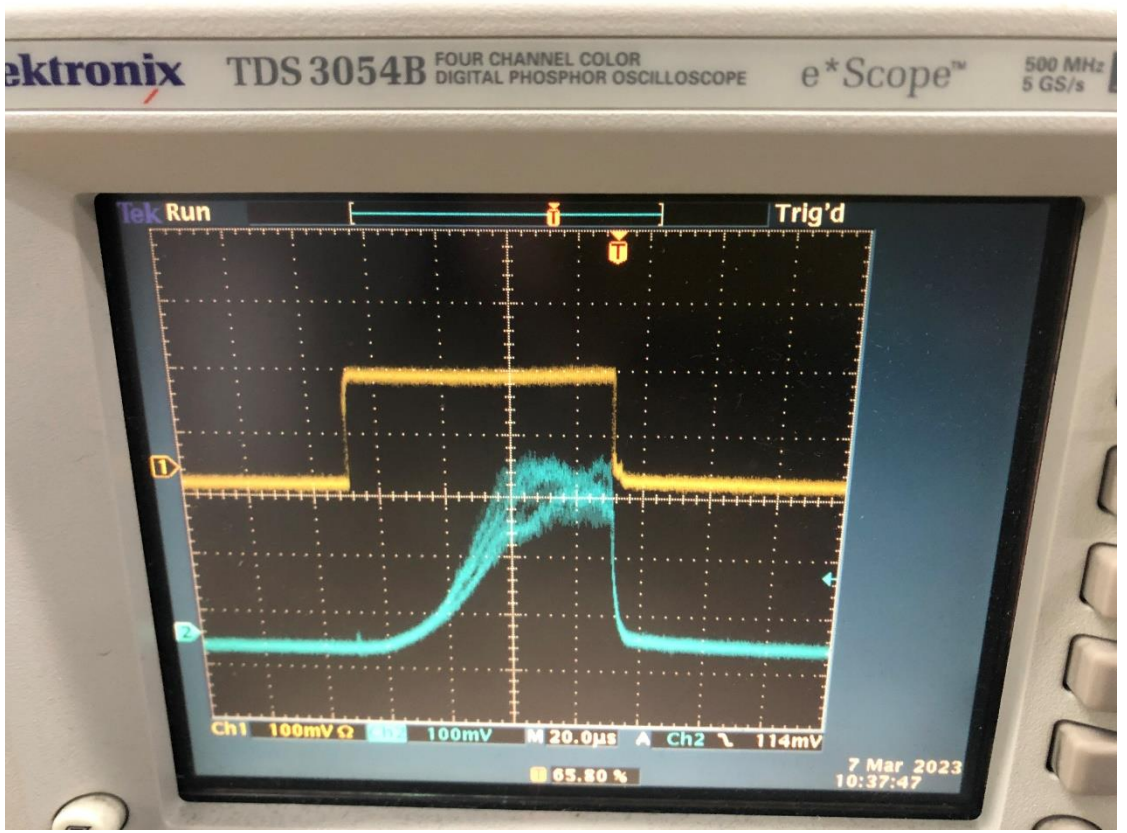
PRIVATE & CONFIDENTIAL			TITLE CUSTOM CLEANROOM
DRAWN PS	DATE 08/03/2023	CHECKED	
DIMENSIONS IN mm	SCALE 1:50		DRAWING No CR-0400-1 SHEET 1 OF 2 / ISSUE A
TOLERANCE ± 0.5 HOLE/STUD CTS ± 0.3			PART No

Planar sample deposition

HIPIMS deposition of Nb on Dia Copper from RT to 650 C





Additional analytical systems

Secondary Ion Mass spectrometry SIMS/SMNS:
Both static and dynamic SIMS
Cs for negative ions and Oxygen for positive ions
Detection limit ppm.

FE SEM
Large sample
Compatible with ion beam milling
EDX mapping and 3D topography
EBSD

1 metre NEG coating facility commissioned for 20 mm and 38 mm ID for both Cu and SS