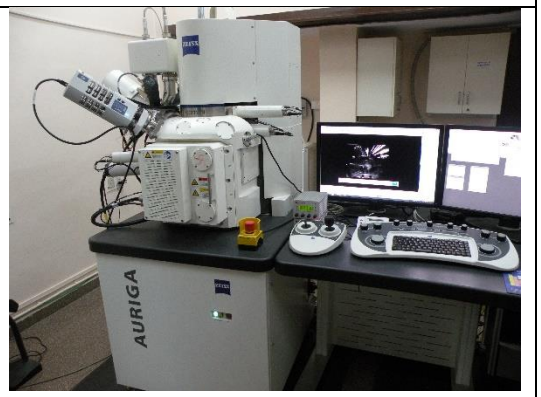
List of Facilities for Microstructure Characterization, BARC to Share with UGC-DAE-CSR (Mumbai)

S. No	Instrument	Research Area	Contact Person	Phone No. (Extn)	Photograph, if you intend to include
1.	**Scanning Electron Microscope (FIB-FESEM)** **Make**: Carl Zeiss **Model**: Auriga FESEM **Gun**: Filed emission (FESEM), Ion beam (FIB) **Voltage**: up to 30 KV **Detectors**: SE, In lens, BSE, EBSD, Oxiford EDS	Microstructure Characterization	Head, MSD rtewari@barc.gov.in B. Viswanadh bvisu@barc.gov.in	022-25595065/ 022-25592022	
2.	**Transmission Electron Microscope** **Make:** Carl Zeiss **Model**: Libra200FE **Voltage:** up to 200 KV **Gun:** Field emission **Modes Of Operation:** Bright Field, Dark Field, High resolution imaging, HAADF **Composition analysis**: Bruker EDS, EELS	High resolution microstructure Characterization	Head, MSD / Dr. S. Neogy rtewari@barc.gov.in and neosuman@barc.gov.in	022-25595065 and 022-25595465	

3.	**Electron Probe Micro Analyser** **Make:** CAMECA **Model**: SX100 **Voltage:** up to 30 KV **Gun:** Tungsten Filament **Modes Of Operation:** SE, BSE, X-ray **Composition analysis**: Bruker EDS, WDS	Chemical analysis and quantification at micron level	Head, MSD / Dr. Pranesh Sengupta rtewari@barc.gov.in and sengupta@barc.gov.in	022-25595065 and 022-25590468	
4.	**Electron Spectroscopy for Chemical Analysis (ESCA) with Auger Electron Spectroscopy (AES) system** **Make:** Specs GambH **Model**: HXPS **Voltage:** 1.5 kV **Gun:** Low energy electron gun (upto 10 eV), Mg/Al X-ray anodes **Modes of Operation:** Surface analysis and depth profiling **Composition analysis**: detectable upto 0.1at%; from C- to U in ESCA and Li to F in AES	Characterization of electronic state at the Surface of sample	Head, MSD / Dr. Pranesh Sengupta rtewari@barc.gov.in and sengupta@barc.gov.in	022-25595065 and 022-25590468	

5.	**Transmission Electron Microscope** **Make:** JEOL Model: JEOL3010 **Voltage:** up to 300 KV **Gun:** LaB6 **Modes Of Operation:** Bright Field, Dark Field, High resolution imaging, Precession electron Diffraction **Composition analysis**: Oxford EDS	Microstructure and micro texture Characterization	Head, MSD rtewari@barc.gov.in B. Viswanadh bvisu@barc.gov.in	022-25595065/ 022-25592022	

6.	**3D APT**	Atomic level chemical composition	Dr. A. Biswas abiswas@barc.gov.in	022-25593815	
7.	**Knudsen Cell Set up**	Thermodynamic property measurements as a function of tempertaure	Dr. U. Jain uttamj@barc.gov.in	022-25592908	

8.	**3D profilometer**	Surface characterization	Dr. Kulwant Singh singhkw@barc.gov.in	022-25595378	
9.	**100 kN Universal Testing Machine** Sample: Round – M6, M8, M12, Flat 1-8 mm Strain rate - $1x10^{-4}$ to $1x10^{-2}$ 1/s Temperature – 25-900 °C	Mechanical Testing - Tensile, Compression,	Head, MMD / Dr. B. C. Maji rnsingh@barc.gov.in and bikchan@barc.gov.in	022-25593817 022-25592932	

10.	**Creep Testing Machine** Sample: Round –M8, M12, Flat 1-6 mm Temperature – 25-900 °C	Creep	Head, MMD / Dr. A. Sarkar rnsingh@barc.gov.in and asarkar@barc.gov.in	022-25593817	
11.	**Differential Scanning Calorimeter** **Make**: Mettler Toledo **Temperature range**: RT - 600°C; **Heating rates**: 1K/min to 50K/min; **Cooling rates**: not controllable; **Sample dimensions**: Thin metallic samples of size ~ 5 mm and approx. weight 50-100 mg **Environment** : Nitrogen / Argon gas	Phase transformation	Head, MMD / Dr. J. B. Singh rnsingh@barc.gov.in and jbsingh@barc.gov.in	022-25592358	
12.	**100 kN Universal Testing Machine** Sample: Round – M6, M8, M12, Flat 1-8 mm Strain rate - $1x10^{-4}$ to $1x10^{-2}$ 1/s Temperature – 25-900 °C	Mechanical Testing - Tensile, Compression,	Head, MMD / Dr. B. C. Maji rnsingh@barc.gov.in and bikchan@barc.gov.in	022-25593817 022-25592932	