Annexure- B2

Brief Details about Analytical High Resolution Transmission Electron Microscopy (HRTEM) Facility

Transmission Electron Microscope (TEM), which can offer sophisticated measurements at finest length scales. A large number of researchers and students at CSIR-AMPRI and in the nearby regions of Bhopal are engaged in investigating the properties of diverse class of materials and its phenomenon. The synthesis and characterization of various nanomaterials like 2D-graphene, nanopillar based organic semiconductors, graphene composites, carbon nanotube (CNT), metal matrix composites, nanopiezoelectric generators, supercapacitors, nanopores electrodes, radiation shielding materials, shape memory alloys, micro and nanoporus metal/carbon foams, deformation behavior of metals and alloys, precipitation hardening and metal forming.

At CSIR-AMPRI, in this TEM, we have Scanning Transmission Electron Microscope (STEM) with High-Angle Annular Dark Field Detector (HAADF), Energy Dispersive Spectrometer (EDS) along with TEM sample preparation equipments such as, Ion milling system, Ultrasonic disc cutter, Dimple grinder, Disk punch, lapping disk and Diamond saw. In future, it is proposed to have Electron Energy Loss Spectrometer (EELS) and a heating stage as attachments. This facility is created under facility creation project and CSIR HQ provided its funding. This system is capable of performing microanalysis such as micro diffraction, rocking beam channeling patterns, qualitative and quantitative X-ray spectroscopy analysis, particle size analysis, dislocation density and movement, precipitation, nucleation and growth. Employing such instrument in CSIR-AMPRI could throw light on the morphological, structural and compositional

analysis of advanced materials developed at CSIR-AMPRI. This facility will enhance the research quality of CSIR-AMPRI and neighboring institutes of Madhya Pradesh to carry out innovative research on advanced materials and develop know - how / technologies.