

Webinar

Advanced transmission electron microscopy methods for atomistic structural and electronic characterization of materials

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Transmission electron microscope (TEM) has emerged an indispensable tool for the advanced atomistic structural, spectroscopic and electro-magnetic characterisations. In this presentation, I will highlight various advanced emerging TEM techniques and will show that, how these techniques combined with density functional theory (DFT) calculations unveil the underpinning electronic mechanism at atomic scale in various electronic functional materials. The results will emphasise the versatility of TEM in characterising a broad range of materials e.g., thermoelectric material, nanoparticles, strongly correlated material, 2D materials, thin film etc. I will particularly highlight atomic magnetometry techniques, electron magnetic circular dichroism (EMCD) and electron energy-loss spectroscopy (EELS) technique in TEM, which can provide atomic scale magnetic information in magnetic materials. These results will show that how TEM has developed and emerged as an atomistic quantitative characterisation tool, beyond just a high-resolution imaging tool. Finally, I will also provide a purview of simulation of multislice HR/S-TEM imaging, spectroscopic simulation in TEM with multi-dimensional data analysis in TEM from the perspective of computational electron microscopy.

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04:00 PM