

Department of Physics, Faculty of Natural Sciences (FNS)

EXPERT TALK

Physics of Energy Storage Devices and Structural Implications on Electrode Materials



SPEAKER

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VENUE

C301, Ramaiah Technology Campus
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The development of new and novel electrode materials for energy storage devices has become the intensive research by the materials science community because of its importance in the portable electronic devices, hybrid electric vehicles and many other applications. LiFePO_4 's performance is limited by low conductivity, motivating electronic-structure studies across crystallite sizes using Mössbauer and X-ray absorption spectroscopy. Lattice contraction is continuous, but electronic properties show a ~ 30 nm threshold, including varying $\text{Fe}^{2+}/\text{Fe}^{3+}$ ratios. Size-dependent lattice distortion enhances polaronic conductivity, making nanocrystalline LFP more effective for battery cathodes.