Tata Institute of Fundamental Research
Survey No. 36/P, Gopanpally Village, Serilingampally, Ranga Reddy Dist., Hyderabad – 500 046

Students' Annual Seminar

Understanding the electrode-electrolyte interface and the role of interfacial water structure during electrochemical reactions

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Electrochemical processes are the only ones with 100% theoretical efficiency for the conversion of the Gibbs free energy of a chemical reaction into useful work (or, vice versa). In such processes, electrode–electrolyte interfaces play a critical role in determining the various electrochemical charge accumulation and transfer processes. Hence, a deep knowledge of the structure and dynamics of the electrolyte at the interface is essential for improving the efficiency of electrochemical systems. In this talk, we will discuss how vibrational spectroscopy techniques, including, infrared spectroscopy, and Raman scattering is applied in situ to study the interfacial water structure, revealing structural information at the nanometre scales. We will also discuss the estimation of surface charge density Vs potential curve, in a view to connect the simulated and experimental results.

Friday, Mar 22nd 2024

13:45 Hrs (Tea / Coffee 13:30 Hrs)

CR-4, TIFR-H