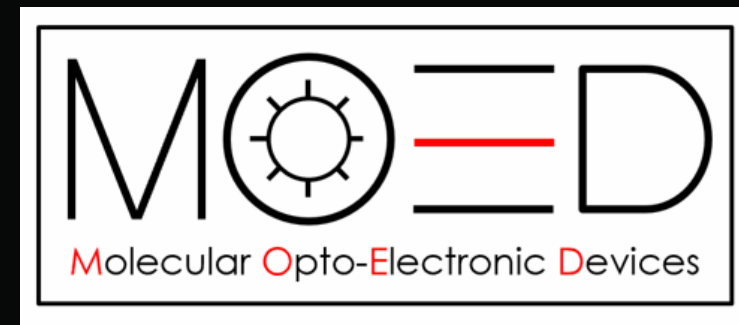


#ICMolTalks

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June, 11th - 12:30h

📍 Assembly Hall

Invited by

Energy Resolved Electrochemical Impedance Spectroscopy: DOS Mapping in Organic Semiconductors and Perovskites

Abstract

Although the density of states (DOS) distribution of charge transporting states in an organic semiconductor and perovskites is vital for device operation, its experimental assessment is not at all straightforward. In this lecture, the technique of energy resolved–electrochemical impedance spectroscopy (ER-EIS) is presented to determine the DOS distributions of valence (highest occupied molecular orbital) and conduction (lowest unoccupied molecular orbital) bands as well as the energy distribution of defect states. The potential of the ER-EIS is demonstrated on archetypal organic semiconductors (P3HT, PMPSi) and organic-inorganic hybrid perovskites. The results demonstrate that this technique does not only allow mapping the DOS distributions over five orders of magnitude and over a wide energy window of 6 eV, but can also delineate changes that occur with modifications during layer preparation and their degradation.

Biography

Vojtech Nádaždy, a senior researcher at Institute of Physics, SAS, Bratislava where he received his Ph.D. in condensed matter physics in 1994. Among his research interests is the field of semiconductors applied in solar cells with a major in the characterization of defect states. He completed several stays abroad focused on chalcopyrites (1994, Salford University, U.K.) metastability research in a-Si:H (1998, Kanazawa University, Japan), development of a-Si:H solar cells on plastic substrate (2002-2004, Helianthos project, Delft University, The Netherlands), charge transport in organic semiconductors (2009, TIT, Japan).