

## Palani Balaya



Palani Balaya works in the area of Nano-ionics for energy systems. He is interested in the fundamentals of transport as well as energetics of nanostructured materials, and the energy conversion as well as storage using nanomaterials. In the context of transport in nano-sized systems, Palani is the first to provide direct experimental evidence for an anomalous mesoscopic electrical conduction in nanocrystalline  $\text{SrTiO}_3$  where the transport is solely due to interfaces/associated space charges with no contribution from the bulk. In the area of lithium batteries, the work on nanocrystalline  $\text{RuO}_2$  is worth mentioning, as this model material exhibits both high lithium storage (1130 mAh/g) as well as nearly 100% coulombic efficiency. This is the only material known so far that exhibits such a favorable combination of high storage and high reversibility. During his stay at the Max Planck Institute for Solid State Research, Stuttgart he also provided strong experimental evidences for the interfacial Li storage in metal/ $\text{Li}_2\text{O}$  nanocomposites – a novel storage mechanism introduced by researchers at Stuttgart. Currently Palani is interested in investigating the transport behavior of nanomaterials for solar cells and aims to improve their efficiency by tailoring the transport of charge carriers at their interfaces.

During last few years, Palani Balaya has served as a Scientist at the Inter University Consortium, Bhabha Atomic Research Centre, Mumbai, Visiting Fellow at the Madras University, Chennai, Guest Scientist at Max Planck Institute for Solid State Research, Stuttgart and presently as an Assistant Professor at the National University of Singapore, Singapore. Palani has contributed to about 40 research articles in international journals as well as conference proceedings. He has been involved in a number of research projects among which worth mentioning is the ALISTORE

(Advanced Lithium Storage) project sponsored by European Union. He has contributed to four patents. He is also member of Electrochemical Society, Solid State Ionics Society, Marquis Who's Who in the World and Marquis Who's Who in Asia.

(For details see: [http://www.esp.nus.edu.sg/resume/Balaya\\_files/Balaya.htm](http://www.esp.nus.edu.sg/resume/Balaya_files/Balaya.htm))