



Birla Institute of Technology & Science, Pilani

Pilani Campus

Dr. Anshuman Dalvi, Ph.D., Professor, Department of Physics
Associate Dean, Faculty Affairs

30th November 2019

Application invited for JRF Position (DST-CRG Project CRG/2019/001442)

Applications are invited for one position of JRF (leading to PhD degree from BITS Pilani) in a DST-CRG, Govt. of India funded research project on condensed matter experimental physics entitled, “*Li⁺ NASICON-Polymer Hybrid Composites for Solid State Supercapacitor Applications*” at Department of Physics, Birla Institute of Technology and Science, Pilani, Pilani campus.

Nature of the work:

Supercapacitors store energy within the double electrochemical layer at the electrode/electrolyte interface. In the traditional supercapacitors, an ion permeable film soaked with liquid electrolyte is placed between high surface area electrodes. Replacing liquid electrolytes with a solid electrolyte may improve their reliability for high temperature, low dimensional and environment friendly, corrosion free applications. Investigation aims at development and characterization of all-solid-state supercapacitors using NASICON-polymer hybrid membranes as separators and high surface area electrodes. Applying various hybrid electrolytes prepared from Li⁺ ion NASICONs and polymer hosts, electrochemical double layer capacitors (EDLCs), pseudo capacitors and hybrid supercapacitors will be fabricated and characterized. Work thus would involve synthesis of Li⁺ ion based NASICON-polymer hybrid composite films and fundamental characterization (ii) development of button-type solid state supercapacitors (EDLC, Pseudo and Hybrid) using novel NASICON polymer hybrid films as electrolytes and their characterization. Finally, efforts will be to develop an understanding of the mechanism of charge transfer at the electrode-electrolyte interface and role of solid electrolyte in performance of supercapacitors.

Duration of the Project: 3 Years

Eligibility Criteria: M. Sc. in Physics/M.E. Materials Science/M.Tech. Nanotechnology with at least 60% marks. CSIR-NET/GATE qualification and experience in relevant area will be preferred.

Fellowship: As per DST core research grant norms **How to apply:** Interested candidates may send application and detailed CV to undersigned (adalvi@pilani.bits-pilani.ac.in) on or before **31st December, 2019**. Interested candidates are also suggested to apply for PhD programme of BITS Pilani for which admission is open (second semester, 2019-20 test and interviews are likely in January first week)

Prof Anshuman Dalvi

(Principal Investigator)



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