



INDIAN INSTITUTE OF TECHNOLOGY GUWAHATI  
SHORT ABSTRACT OF THESIS

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Programme of Study : Ph.D.

Thesis Title:

Ionic Liquids and Deep Eutectic Solvents as Electrolytes for Energy Efficient Electrical Double Layer Capacitor

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**SHORT ABSTRACT**

The thesis incorporates physical and electrochemical characterization of ionic liquids (ILs) and deep eutectic solvents (DESS) as electrolytes for double layer supercapacitor. The study covers nine different electrolytes and compares the results. Three different organic solvents at different weight percentages are used to dilute the IL electrolytes. Molecular dynamic study is carried out to have the molecular insights of ion diffusion. The DESS' performance is found to be equivalent to that of pure ILs. Overall, the ILs namely 1-alkyl-3-methylimidazolium bis(trifluoromethylsulfonyl)imide in organic solvent result in better electrochemical performance for double layer charge storage.