



Converting ionic liquids into films for energy storage application

Amrita Jain^{1*}, Monika Michalska²

¹Institute of Fundamental Technological Research, Polish Academy of Sciences, Pawińskiego 5B, 02-106 Warsaw, Poland

²Department of Chemistry and Physico-Chemical Processes, Faculty of Materials Science and Technology, VŠB-Technical University of Ostrava, 17. listopadu 2172/15, 708 00 Ostrava-Poruba, Czech Republic

*Email: ajain@ippt.pan.pl

Energy storage devices have always been an important part for the development and advancement of society. One of the possible ways to address this issue are supercapacitors as they have high capacitance, high power density and sufficiently accepted energy density. Depending upon the electrode material used, supercapacitors are classified into two types; pseudocapacitors and electrochemical double layer capacitors (EDLCs). The second component in supercapacitors are electrolyte materials. By using the traditional liquid electrolytes, the device may face many challenges like leakage, safety issues, low ionic conductivity etc. Polymer electrolyte has attracted ever-increasing interest, both in academia and industry, for the past two decades due to the potentially promising applications of such electrolytes, not only in all solid-state rechargeable lithium or lithium-ion batteries, but also in other electrochemical devices such as supercapacitors, electrochromic windows, and sensors. In the present work, hydrophilic ionic liquid 1-ethyl-3-methylimidazolium hydrogen sulfate has been used to prepare polymer films using polyvinyl alcohol as host polymer. The films were characterized and used in supercapacitor application. The results of the measurements will be presented at the conference.

Keywords: Supercapacitors; Polymer gel electrolyte; Host polymer; EDLCs