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Preparation of ionogels for supercapacitor application

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Supercapacitors have recently become the devices of interest because of several reasons like an alternative to rechargeable batteries in applications like memory back-ups, medical appliances etc. One more advantages of supercapacitors are that they are environmental friendly and safe device as compared to Li-ion battery. 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. As a part of WP5 of AtomDeC project, hydophilic ionic liquid 1-ethyl-3-methylimidazolium hydrogen sulfate has been used to prepare polymer films using polyvinyl alcohol has 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; ELDCs