



## **Why carbon behaves differently in energy storage devices**

**Amrita Jain<sup>1\*</sup>**

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

\*Email: [ajain@ippt.pan.pl](mailto: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, different types of carbon materials have been used to test as electrode materials and the performance has been compared experimentally and theoretically. The results of the measurements will be presented at the conference.

*Keywords: Supercapacitors; Polymer gel electrolyte; Host polymer; ELDCs, Carbons*