

Studies on Conductivity and Dielectric Properties of PEO/PVP Nanocomposite Electrolytes for Energy Storage Device Applications

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Investigations on Sodium-ion conducting polymer blend electrolyte systems based on PEO/PVP, complexed with $NaIO_4$ salt and TiO_2 nanofillers were presented in this report. The complexed polymer blend electrolytes were prepared in the form of dimensionally stable and free-standing films by conventional solution cast technique. Micro Raman and XRD studies confirmed the miscibility between PEO and PVP and the complexation of the salt with PEO/PVP polymer host. TEM measurements were carried out to evaluate size & distribution of the dispersed TiO_2 nanofillers. Complex impedance spectroscopy in the frequency 1 Hz – 1 MHz within the temperature range from room temperature to 343 K. Ionic conductivity of blend electrolytes increased with the increase of TiO_2 nanofillers concentration. Electrical conductivity and dielectric properties of $NaIO_4$ salt complexed blend PEO/PVP/ Na^+ electrolytes were analysed as a function of TiO_2 nanofillers concentration [1, 2].

References

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