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Temperature effect on ion transport and dielectric characteristics of metal sulfide-based gel polymer electrolytes

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Efficient utilization of clean and renewable energy resources helps to overcome the increase in energy demand. Thus, the need of producing a clean energy encourage sustainable improvement in technological applications of converting/storing energy devices such as batteries, capacitors and solar cells. Gel polymer electrolytes (GPE) perform a critical role in the enhancement of energy converting/storing systems. GPE was modified using metal sulfide colloidal semiconductor salts. Methyl cellulose was selected as polymer host while, ZnS, Cu2S and metal sulfide colloidal semiconductor salts. Metal sulfide colloidal semiconductors were prepared and phase structure characterized via co-precipitation method and X-ray diffraction (XRD) technique respectively. The effect of metal salt on the crystallinity/amorphous nature of polymer host was studied by carrying out XRD. The effect of temperature and frequency on the ion transport and dielectric parameters were investigated using electrochemical impedance spectroscopy (EIS) measurements were done to obtain the bulk resistance and ion transport. The highest system of metal sulfide colloidal semiconductor salts -based GPE is nominated to be used in converting/storing energy applications

Biography

Nada Masmali has her expertise in disciplines of materials science; solid state physics. Her area of Interests are advanced materials; characteristics of semiconductor materials (oxide and sulfide semiconductors); ionic conductors, polymer electrolytes; dielectric properties; photovoltaic devices; dye/quantum dot sensitizer solar cells, optoelectronic and nanodielectric applications.

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