

عنوان مقاله:

Electrophysical properties of sonochemically prepared CdSe/PVA nanocomposites

محل انتشار:

دومین کنگره بین المللی علوم و فناوری نانو (سال: 1387)

تعداد صفحات اصل مقاله: 2

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خلاصه مقاله:

Preparation of semiconductor chalcogenide/polymer nanocomposites has attracted much attention due to their interesting physical and electrical properties. The electrophysical properties of nanoparticles are interesting because of the effect of confinement of charge carriers in such particles are expected to produce [1]. In the case of semiconductor polymer nanocomposites, it has been established that the confinement of charge carriers perturbs the band structure resulting in a series of discrete states in the conduction and valance bands and in an increase of the effective band gap. The interaction and transition processes between polymer surface and semiconductor nanoparticles are also affect on electrical properties of these materials. Polymers are excellent host materials as capping agent and stabilizer since they prevent agglomeration and precipitation of the particles. Polymer based semiconductors are also advantageous from point of view of film preparation. The embedding of such semiconductor nanoparticles polymer matrix can be consider as potential candidates for their use in electronic and optoelectronic devices. Polyvinyl alcohol (PVA) is an important polymer having a high dielectric strength ($>1000\text{ kV/mm}$), good charge storage capacity and dopant dependent electrical and optical properties[2]. Further, it should be noted that the study of dielectric relaxation processes in semiconductor polymer nanocomposites help us in understanding the molecular motions and their interactions which are affected by chemical composition, molecular structure and morphology of the sample being examined. The present paper reports the dielectric properties of nanocrystals of CdSe/PVA nanocomposites over temperature from 300K to 450 K and frequency from 200Hz to 1MHz

کلمات کلیدی:

لینک ثابت مقاله در پایگاه سیویلیکا:

<https://civilica.com/doc/163312>

