

SEMINARIO

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Piezo/photo-electricity of SbSI nanowire heterostructure

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Heterostructure ferroelectric antimony sulfiodide (SbSI) nanowires and titanium dioxide (TiO₂) / molybdenum disulfide (MoS₂) / graphene nanoparticles was synthesized, studied and proposed energy harvester applications. SbSI nanowires were fabricated under ultrasonic treatment. Sonochemical synthesis was performed in the presence of TiO₂/MoS₂/Graphene nanoparticles. The crystalline one-dimensional (1D) structure of the SbSI heterostructure was confirmed using high resolution transmission microscopy (HRTEM). The morphology and chemical composition of the material were examined by applying scanning electron microscopy (SEM) and energy-dispersive X-ray spectroscopy (EDS), respectively. The direct energy band gap was determined for heterostructure using diffuse reflectance spectroscopy (DRS). The results were presented for different concentrations of nanoparticles. Polymer matrix nanocomposites containing heterostructures were developed. The results for mechanical excitation and lighting are presented. Differences in voltage responses for various heterostructures have been demonstrated. The presented devices can be used as multiphysical energy harvesters.

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