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Modeling, Synthesis and Characterization of CdS-ZnS Core-Shell Nanocomposites for Application as Low Pass Filter

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Abstract—*In the present work, the CdS-ZnS core-shell nanoparticles embedded in PolyVinyl Alcohol matrix has been synthesized by chemical method. The core-shell nanocomposites are characterized by the TEM, SEM, XRD and UV-Vis spectroscopy techniques. The resistance, capacitance, inductance and impedance of the nanodevices made of a micron size drop of the nanoparticle solution as an active layer on a printed circuit board has been measured using LCR meter. The obtained L, C,R data are used in a modeled second order filter circuit as input parameter to obtain its frequency response, phase shift and transfer function using COMSOL Multiphysics software and compared with the experimental results. It is found from the present study that the low pass filter characteristics has been obtained for CdS - ZnS core-shell nanocomposites.*