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# AKSHANA PARAMESWARAN: Nanostructured thin films of tin sulphide for photodetector applications from pulsed laser ablated nanocolloids

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Photodetectors based on nanostructured semiconductor materials have been successfully used in advanced communications, flame detection, air purification, ozone sensing and leak detection, among others, in the past few decades. We present fabrication and characterization of photodetectors based on nanomaterials using their nanocolloids prepared by Liquid-phase Pulsed Laser Ablation technique which can lead to photodetection in enhanced wavelength ranges with improved efficiency. Tin sulfide (SnS) nanoparticles were synthesized by pulsed laser ablation of a SnS target in different liquid media using the 1064 nm output wavelengths from a pulsed (10 ns, 10 Hz) Nd:YAG laser. The nanocolloids obtained were spin coated on different substrates for the development of thin films and also the p-type SnS nanocolloids were deposited on an n-Si wafer for the p–n heterojunction fabrication. The fabricated films were characterized by techniques like UV-Visible spectroscopy, XPS, Raman, SEM, XRD etc. To investigate the photoresponse, the device was illuminated using varying light emitting diodes (LED) and bias voltages. The key parameters of a photodetector, the responsivity (R), sensitivity, detectivity, rise time and fall time were estimated.

**Session Classification:** PLENARY TALKS

**Track Classification:** SYMPOSIUM ON LASER ABLATION