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**Fabrication of highly efficient ZnS-based piezoelectric Nano generator****Haranath Divi***Department of Physics, National Institute of Technology Warangal, India*

In the current work, we have demonstrated the effect of growth temperatures on the morphology and piezoelectric characteristics of zinc sulfide Nano sheets (ZnS-NS) grown on aluminum (Al) substrates. More precisely, we have fabricated two Nano generator devices based on two different growth temperatures namely, 140 °C and 160 °C. It has been observed that an increase in growth temperature has a greater influence on the aspect ratio of ZnS-NS due to the presence of extra thermal energy leading to significant structural deformation which in turn optimizes the exact growth temperature for the synthesis. Indium doped tin oxide (ITO) coated on polyethylene terephthalate (PET) substrate and ZnS-NS deposited thin Al foil were used as top and bottom electrodes respectively, for the fabrication of a piezoelectric Nano generator (PENG) device. The open-circuit voltage for the as-fabricated PENG devices made at 140 °C and 160 °C growth temperatures were ~400 mV and ~600 mV, respectively. For the first time, a systematic study was carried out on the ZnS-NS system for designing novel PENG devices that are highly efficient energy harvesters and can scavenge biomechanical energy for next-generation flexible self-powered electronics devices. This study also promises for a good replacement of conventional ZnO Nano sheets based 2D PENG devices due to its simplicity, flexibility, single-step production process, cost effectiveness, and high output gain.

**Biography**

Haranath Divi is currently working as Associate Professor in the Department of Physics, NIT Warangal, India. He was post-graduated (M. Sc.-Physics) from Kakatiya University, A. P. with University First Rank and Two Gold Medals in 1994. He did his Doctoral degree (PhD) from Shivaji University, Maharashtra, India, in 1999. He began his research career as Scientist in the Electronic Materials Division of CSIR-National Physical Laboratory in 2000. He has guided more than 10 Ph.D. and 25 M.Tech students. He has more than 250 research papers in SCI peer-reviewed journals and 9 patents to his credit. His research interests broadly lie in the development of various novel materials and devices for Energy Harvesting Applications. He is the inventor of OzoNIT- a multifunctional chemical-free virus disinfectant system. He was recently conferred as the Fellow of Luminescence Society of India.

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