

Development of nanogenerators for mechanical energy harvesting and self-powered electronics

By



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Abstract:

Development of renewable energies is crucial for meeting future energy needs. Solar, mechanical and kinetics energies can provide sufficient electricity needed in daily life. Mechanical energy harvesting approaches, such as electromagnetic, piezoelectric, triboelectric and electrostatic, have been utilized for energy conversion. In this pursuit, single effect and hybrid generators were fabricated in order to analyze the contribution of each effect and their impact on the power generation process. Toward designing effective structures and power management as well as for future simulation of a range of single and hybrid generators, a comprehensive theoretical and experimental study was conducted on the impacts of a wide range of design parameters on the output properties and load characteristics under resistive and capacitive loads. This seminar intends to present the underlying concepts of the transduction mechanisms and recent research accomplishments. Future prospects and suggestions of potential application will also be discussed.