

Energy harvesting piezoelectric materials: Fundamental, applications and Challenges

Shreya Dongre , Shreshth Yadav , Ritik Choudhary , Amul Jain , Ankit Rathore , Shivansh Kataria ,
Pradeep Singh

Department of Mechanical Engineering, Samrat Ashok Technological Institute, Vidisha, India
(464001)

Corresponding Author

Contact No. +917987186738

Email: erpradeep3408@gmail.com

Abstract

Now a days, global demand of energy is significantly rising due to proliferation of industry. Non-renewable energy sources are limited and prime cause of environmental pollution. Hence, it is a challenge to explore the alternative source of energy. Piezoelectric materials are attracting the attention of researchers to extract the electricity owing to their piezoelectric property. Piezoelectricity is the property of the material by which mechanical energy can be converted in electricity or vice versa. Ceramics, polymers and composites are widely used to synthesise the piezoelectric materials by altering the crystal structure favourable to piezoelectricity. Electro-spinning, plasma liquid interaction, 3D printing, solution casting are the popular methods to synthesise the piezoelectric materials. The applications of piezoelectric materials are continuously increasing in the field of energy harvesting, actuating and sensing. This paper focused on the various methods to prepare the piezoelectric materials with improved piezoelectricity, future scope and challenges in energy harvesting.

Keywords: Piezoelectricity; Renewable energy ;Energy harvesting ; Piezoelectric sensor