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## Study of magneto electric effect for sensing and energy harvesting applications

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Magnetolectric (ME) effect occurs when a change in magnetic field triggers stress in the magnetostrictive material which is then transferred to an adjacent ferroelectric material which generates voltage under direct piezoelectric effect. This product effect enables several sensing and energy harvesting applications. In this talk, we will present an overview of research on magnetolectric phenomenon within nanoscale through bulk scale and explain the working principle of devices and systems. Particularly, we discuss advances in particulate ME composites, laminate ME composites, 3-1 ME composites. We also present development of piezoelectric and magnetostrictive composites as well as design and fabrication of ME devices. This study demonstrates importance of material selection, design of devices and its applications such as gradiometer and energy harvester.

### Biography

Vishwas N Bedekar has received his PhD degree from University of Texas at Arlington. He has several years of experience in synthesis and characterization of piezoelectric and magnetolectric materials. He has also worked on carbon based nanomaterials and design and development of energy harvesting devices and systems. He is currently an Assistant Professor in the Department of Engineering Technology at Middle Tennessee State University. He has authored over 30 publications in peer reviewed journals, conference proceedings and conference presentations. He has authored two book chapters and is reviewer on 10 internationally circulated journals related to materials science research.

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