

# 第18回山梨エレクトロセラミックスセミナー

日 時：2014年6月18日（水）15:00-18:00

場 所：情報メディア館4F会議室

いつもお世話になっております。山梨大での研究活動の一環として、国内外の電子セラミックスの分野で活躍されている研究者の方々にその成果を発表していただく場として、新たに「山梨エレクトロセラミックスセミナー」を設立しました。その第18回として、以下の講演を行います。ぜひ、ご参加いただき、今後ともこの活動にご協力いただければ幸いです。

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**講演題目：「Magnetoelectric Structures of Piezoelectric /  
Magnetostrictive Materials For Energy Harvesting and Sensor Applications」**

## 講演概要

Multiferroics exhibit at least two of the “ferroic” properties i.e. ferroelectricity, ferromagnetism, and ferroelasticity in the same phase. Multiferroic magnetolectric (ME) composite materials of magnetostrictive-piezoelectric phases possesses strong multiferroic / ME property through elastic interactions occurring at the interface of these two phases. The ME structures comprising piezoelectric / magnetostrictive phases can generate power with multiple stimulation sources like mechanical and magnetic vibrations and will enhance the power density as well as time efficiency of the harvesters. The ME materials are those materials which exhibits the so called magnetoelectric effect i.e. inducing magnetic (electric) polarization by applying an external electric (magnetic) field.

Since the ME composites comprise of the piezoelectric/ magnetostrictive structures, they can find their possibility for vibrational-to-electricity power generators, i.e., energy harvester. Also, the piezoelectric generators are known to be effective in producing high power density due to their ability of converting mechanical energy into electrical energy for large amounts of stress and have simple structures compared to the other generators using electrostatic and electromagnetic effects.

Thus, the ME (piezoelectric/magnetostrictive) harvesters can generate power with multiple stimulation sources like mechanical vibration and magnetic vibration and will enhance the power density as well as time efficiency of the harvesters. Here, the idea of ME effect and piezoelectric vibrational energy harvester is discussed.

At the end of talk some aspects of synthesis of template particles and their orientation will be discussed.

Keywords: Magnetoelectric materials, piezoelectric effect, d33, magnetostriction, energy harvester, Template design.

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