第 9 回山梨エレクトロセラミックスセミナー

日　　時：2010 年 12 月 8 日（水）14:00-15:30
場　　所：　総合研究棟　2 階　　202 会議室
主　　催：IEEE UFFC JAPAN CHAPTER
共　　催：　山梨大学　和田研究室

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 9 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。

講　　師：　Dragan Damjanovic　博士

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Title 1：「Piezoelectric materials: roads to enhanced properties」

Abstract 1 : In this presentation various ways to enhance electro-mecahnical coupling in piezoelectric materials are discussed. These include: domain wall motion and switching, domain engineering, field induced phase changes, piezoelectric Maxwell-Wagner mechanism, texturing and crystal orientation, morphotropic phase boundary, and temperature-, electric field-, stress-, and strain-induced enhancement. Update on each case will be presented and discussed. In particular, new evidence is presented on how domain wall motion can affect overall piezoelectric response of ferroelectric ceramics and why properties of polycrystalline ferroelectrics may be strongly dependent on microstructure. The enhancement of the electro-mechanical properties by compositional instability (the morphotropic phase boundary) is separately discussed in the second part of the presentation.

Title 2：「Origins of enhanced properties at morphotropic phase boundary」

Abstract 2 : Morphotropic phase boundary (MPB) is the most efficient way to enhance electro-mechanical properties. It's attractiveness lies in the fact that it is stable with time and temperature and is intrinsic to the material. It is the basis of the success of PZT as a piezoelectric material. However, the last decade has shown that it is difficult to reproduce good properties of PZT in lead-free materials. The reasons for this are not well understood and it is worthwhile to revisit our understanding of the MPB. This presentation will discuss origins of the large electro-mechanical properties at MPB (e.g., polarization rotation, monoclinic phases) in PZT and lead-free ferroelectrics and will suggest alternative ways to exploit MPB.

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