

## **Symposium 7: Dielectric, Piezoelectric, and Ferroelectric Materials: Advances for Emerging Applications**

Dielectric, piezoelectric, and ferroelectric materials have played key roles in a variety of modern electric devices and established the huge market. The application field of the electroceramics keeps expanding, while the lack of solution materials seems to remain barriers in some applications, e.g., electric double layer capacitors for energy storage, high temperature capacitors for power devices, post-barium titanate for sustainable downsizing of MLCC, and lead-free piezoelectrics for RoHS. These pressing applications need the evolution of the dielectric materials for breakthroughs. Toward the evolution, advanced approaches: materials computations, noble sintering processes incorporating liquids, defects or stress engineering, materials probing with advanced photon or electron sources, and so on are attracting much attention of researchers and engineers. This symposium covers a variety of topics for the advancement of electroceramics. The aim of this symposium is stimulating innovative approaches for unique dielectrics, which can be the solutions for the emerging applications.

### **<PROPOSED SESSION TOPICS>**

- Fundamentals and applications of piezoelectric materials (single crystals, nano-domain, domain engineering, grain-oriented ceramics, PZT-based system, lead-free system, sensors and actuators)
- Ferroelectric thin film memories and MEMS devices
- Fundamentals of ferroelectrics and related materials (multi-ferroic and relaxor materials, etc.)
- Novel processing of electronic ceramics and oxide thin films (hydrothermal process, low temperature sintering, and non-equilibrium process, etc.)
- Dielectric materials and capacitor applications
- Optical properties of ferroelectric ceramics and optical crystals
- Processing and properties of energy materials (piezoelectric, ferroelectric, and ionic materials)

### **<ORGANIZERS>**

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### **<INVITED LECTURES>**

Tentative invited lecture information is posted in the following URL;

[http://www.ceramic.or.jp/pacrim13/list\\_of\\_invited\\_speakers.html#7](http://www.ceramic.or.jp/pacrim13/list_of_invited_speakers.html#7)