MSE 2024

24 - 26 Sep 2024 (Darmstadt)
dgm.de

Topic F: Functional Materials, Surfaces and Devices

F06: Piezoelectric Oxides

Piezoelectric oxides represent extraordinarily variable systems for the application of new fundamental materials and physical phenomena due to tuneable composition and, if applies, size of ferroelectric domains. The impact of point defects and domain walls on macroscopic material properties, their interaction and high thermal stability are attracting for a broad range of emerging applications for e. g. piezoelectric structures and optoelectronic applications. The wide range of properties such as high piezoelectric constants or low acoustic losses enables the use piezoelectric oxides as actuator or resonant sensor respectively. Therefore, process monitoring and control is feasible even under extreme conditions, provided that the materials offer the appropriate stability.

In the case of epitaxially grown layers, they offer an additional degree of freedom through the heteroepitaxial growth on lattice mismatched substrates. Piezoelectric properties can be modified by a targeted strain engineering.

Recent results on non-polar and polar piezoelectric oxide crystals and films related to their preparation, characterization and application including disclosure of atomistic transport processes are requested. The focus lies on materials that are stable at temperatures above about 300 °C and higher pressures, including lithium niobate, langasite and oxyborate type crystals, and related compounds such as lithium niobate-tantalate solid solutions. Contributions should include but are not limited to:

- Growth of piezoelectric crystals and films
- Preparation of domain structures and heterostructures
- Defect structures
- Electronic and atomic transport
- Acoustic loss
- Atomistic and phenomenological modelling
- Applications

Symposium Organizer


Prof. Dr. Holger Fritze
Technische Universität Clausthal


Dr. Jutta Schwarzkopf
Leibniz-Institut für Kristallzüchtung

DGM