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Growth and characterization of lead-free ferroelectric KNN-based crystals

We have grown by flux method centimeter-sized single crystals from pseudo-hexanary $\text{Li}_2\text{O}-\text{Na}_2\text{O}-\text{K}_2\text{O}-\text{Nb}_2\text{O}_5-\text{Ta}_2\text{O}_5-\text{Sb}_2\text{O}_3$ system. Based on chemical analysis, crystals of compositions $(\text{Li}_{0.023}\text{Na}_{0.583}\text{K}_{0.394})(\text{Nb}_{0.925}\text{Ta}_{0.037}\text{Sb}_{0.038})\text{O}_3$ and $(\text{Li}_{0.034}\text{Na}_{0.609}\text{K}_{0.357})(\text{Nb}_{0.896}\text{Ta}_{0.047}\text{Sb}_{0.057})\text{O}_3$ were characterized by X-rays diffraction which revealed a tetragonal structure. The dielectric analysis confirmed that the ferroelectric behavior of these crystals is very sensitive to little changes in composition as previously observed on ceramics. Such high flexibility of the ferroelectric properties in crystals opens the way towards improved understanding of the relations between structure and polarization in solid solutions which may be an alternative to the lead-based materials.

Der Vortrag findet um **16:15 Uhr** im Gebäude der Materialwissenschaften,
Lichtwiese, Petersenstr. 23, **Raum 228** statt