Lead-free Pyroelectric Materials for Smart City

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To build a smart city/nation, sensing and detecting are essential for collecting information. One of sensing devices is pyroelectric detectors that detect long wavelength infrared (IR) radiation and have five main benefits making it suitable to many applications (1) sensitive in a very large spectral bandwidth, (2) sensitive in a very wide temperature range without the need of cooling, (3) low power requirement, (4) fast response, and (5) generally use of low-cost materials. However, current pyroelectric ceramic is largely lead-based. Since lead is highly toxic, it has been banned in many countries. Therefore development of lead-free pyroelectric materials becomes greatly important.

This presentation will present fundamentals of pyroelectricity and review recent development in lead-free pyroelectric ceramics and thin films.

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