



## Abstract

### Replacement of PZT piezoceramics with lead-free alternative in selected applications

**Paula Huth, Frank Eder, Markus Stephan, Faramarz Kazemi, Franz Schubert**  
**PI Ceramic GmbH, Lindenstraße, 07589 Lederhose**

At some point PZT as the most used piezoceramic material might be replaced by lead-free alternatives in certain applications. The most promising lead-free material families, potassium sodium niobate, KNN and barium sodium titanate, BNT show different characteristic strengths and can therefore be utilized for different applications. In this talk the general characteristics of those material families will be presented.

Furthermore, recent achievements regarding a high-Qm KNN-based material and its possible applications will be shown, focusing on first prototypes of low-power transducers. Comparative amplitude and impedance measurements between PIC181 and the newly developed lead-free PIC758 will be shown.

The ecological footprint of KNN is often described to be worse than BNT and even PZT. This topic will be discussed, based on newest findings.

#### Corresponding author

Paula Huth  
PI Ceramic GmbH, Lindenstraße, 07589 Lederhose  
E-Mail: [p.huth@piceramic.de](mailto:p.huth@piceramic.de)  
Phone: +49 36604 882 4303