

# Application-driven industrial development of piezoceramics

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## Abstract

For more than 40 years, PZT family has been the best established group of piezoelectric ceramics, with a wide variety of compositions, optimised for different applications. It has been divided into hard and soft materials, each of the main groups divided again into subgroups, standardised and widely available in these classical types. The recent development, e.g. medical therapeutical applications (high intensity focused ultrasound, HIFU), requires hard material type to handle the necessary signal level, however, it is desirable at the same time to have a higher dielectric constant in order to match the electrical impedance. This paper presents two new hard materials with dielectric constants of 1900 and 2800. In addition, one of these materials was further modified by means of an engineered structure in order to reduce acoustic impedance to approx. 15 MRayleigh. Typical values will be presented.