

## Alkaline-Earth Doping in (K,Na)NbO<sub>3</sub> Based Piezoceramics

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**Abstract:** In this contribution the effect of alkaline-earth (AE) dopants Mg<sup>2+</sup>, Ca<sup>2+</sup>, Sr<sup>2+</sup> and Ba<sup>2+</sup> on sinterability and functional response of KNN is studied. Ceramic powders with the general formula (K<sub>0.5</sub>Na<sub>0.5</sub>)<sub>1-2y</sub>AE<sub>y</sub>NbO<sub>3</sub>, y = 0.005 were prepared by classical ceramic processing. The values of 94 - 95 % of theoretical density (TD) are obtained for stoichiometric KNN after sintering at 1115 °C for 2 hours. Calcium and strontium doping promotes densification while magnesium doping inhibits it. In the case of Ba-doping a secondary phase forms.

The dielectric constant and piezo d<sub>33</sub> coefficient determined by Berlincourt piezo d<sub>33</sub>-meter of Ca and Sr-doped KNN ceramics are 500 and 95 pC/N, respectively, while the values for undoped KNN are slightly lower.