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The new piezoelectric single crystal obtained by the Ge doping in the α-quartz structure M. MICLAU, A. GROZESCU, R. BUCUR, M. POIENAR, P. VLAZAN, I. GROZESCU, Natl. Institute R&D Electrochemistry and Condensed Matter, Romania, N. MICLAU, "Politehnica" University, Romania, I. MUSCUTARIU, Baldwin Wallace College, USA — The most interesting properties of the quartz-like crystals are its piezoelectric properties, which are strongly influenced by the intrinsic structural distortions of the material and the crystal growth conditions. Thus, physical properties such as coupling coefficient, the $\alpha \leftrightarrow \beta$ transition can be directly related to structural distortions in terms of the bridging angle. We propose a new way to increase the structural distortion, using Ge to dope the SiO2 structure with respect to α-quartz structure type. Growth of α -SixGe1-xO2 crystal was realized hydrothermally using a temperature gradient method. Single crystals were investigated by electron microprobe analysis, X-ray diffraction and atomic force microscopy. The results open the possibility to tune the piezoelectric properties of these materials by varying the chemical composition.

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