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Antiferroelectric nanodomains in morphotropic solid solutions. VLADIMIR SOBOLEV, Department of Physics, South Dakota School of Mines Technology,, VALERIY ISHCHUK, DANIL KUZENKO, Science Technology Center Reactivelectron of the National Academy of Sciences of Ukraine, 83049 Donetsk, Ukraine — It is demonstrated that the decomposition of solid solutions in the vicinity of the boundaries separating the tetragonal and rhombohedral phases in compounds with compositions from the morphotropic boundary region of the "temperature-composition" phase diagram leads to the formation of segregates and to the changes of the solid solution's chemical composition. The appearance of the antiferroelectric nanodomains is possible as a result of the local decomposition of the solid solution and Zr enrichment of local regions in the vicinity of interphase boundaries. It is also shown that the proper thermoelectric treatment of samples containing these segregates can give substantially higher values of piezoelectric parameters in the PZT-based compounds.

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