

Abstract: Temperature dependences of nuclear magnetic resonance spectra of isotopes ^{207}Pb , ^{137}Ba , and ^{93}Nb in polycrystalline samples of $\text{Pb}_x\text{Ba}_{1-x}(\text{FeNb})_{0.5}\text{O}_3$, with $x = 0$ (BFN), 0.5 (PBFN), 1 (PFN) and in $\text{Pb}(\text{FeNb})_{0.5}\text{O}_3$ single crystal (PFN SC) were acquired. Measured nuclear magnetic resonance spectra are analyzed in this work. The temperature dependence of the spectra show strong broadening with decreasing temperature. Part of the temperature dependences of nuclear magnetic resonance spectra did not comply with expected characteristics. Possible hypotheses for interpretation of such behavior are discussed in the text. Probable arrangement of Fe and Nb cations in PFN and BFN phases is deduced and, based on these differences, the contrast in Néel temperatures of these phases is explained.