93Nb
NMR investigation of the multiferroic system Ba$_3$NbFe$_3$Si$_2$O$_{14}$

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— We present 93Nb nuclear magnetic resonance spectroscopy and relaxation data on the new multiferroic system Ba$_3$NbFe$_3$Si$_2$O$_{14}$. The spin-lattice relaxation rate 93$^1/T_1$ and spin-spin relaxation rate 93$^1/T_2$ show a peak at 26 K accompanied by broadening of the NMR lineshapes, characteristic of Néel ordering. Salient features of 93Nb NMR lineshapes in the ordered phase and temperature-dependent 93Nb Knight shifts will be discussed in relation to the possible bulking or tilting of the NbO$_6$ octahedra (caused by magneto-lattice coupling) around the transition.

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