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Martensitic transformation in V_3Si single crystal: ^{51}V NMR evidence for coexistence of cubic and tetragonal phases ALBERT A. GAPUD, University of South Alabama, ARNEIL P. REYES, National High Magnetic Field Laboratory — The Martensitic transformation (MT) in A15 binary-alloy superconductor V_3Si is a second-order, displacive structural transition from cubic to tetragonal symmetry, at temperature T_m a few K above the superconducting transition temperature T_c = 17 K. Though studied extensively, the MT has not yet been conclusively linked with a transition to superconductivity, and remains relevant, e.g. due to renewed interest in soft phonon modes, while V_3Si continues to be of interest, e.g. due to similarities with Fe-As superconductors. Previous NMR studies on the MT in V_3Si have mainly been on powder samples, and with little emphasis on temperature dependence during the transformation. Here we study a high-quality single crystal, where quadrupolar splitting and Knight shift of NMR spectra for ^{51}V allowed us to distinguish between spectra from transverse chains of V as a function of temperature. This revealed evidence of the coexistence of untransformed cubic phase and transformed tetragonal phase over a few K below and above T_m, and that the Martensitic lengthening of one axis occurs predominantly in a plane perpendicular to the crystal growth axis, as twinned domains. More details on the effects on the electric field gradient and the hyperfine field due to spin/orbital susceptibility of electrons are also discussed.

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