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Phase Transition to Modulated Cubic Phase in AuZn alloy¹ S. M. SHAPIRO, Brookhaven National Laboratory, J. C. LASHLEY, Los Alamos National Laboratory, W. RATCLIFF, National Institute of Standards and Technology, D. J. THOMA, J. L. SMITH, Los Alamos National Laboratory — AuZn is believed to undergo a martensitic transition from a high-temperature cubic phase to a reported low-temperature trigonal phase around 60K. Specific heat studies revealed that the transition is second-order for the 50-50 alloy, and first-order for off-stoichiometric compositions. Elastic neutron diffraction studies on a single crystal of the 50-50 alloy showed the surprising result that the martensitic transformation is suppressed and new Bragg peaks appear at $q_o = (1/3, 1/3, 0)$, in a continuous manner. The low-temperature structure can be viewed as cubic with a 3-fold increase in the cell along the [110] direction, similar to what has been observed in premartensitic phases. Attempts to measure the phonon dispersion curves using inelastic x-ray scattering will also be discussed.

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