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Spin Density Wave Suppression in Thin Films of Cr. DANIEL QUEEN, ZOE BOEKELHEIDE, DAVID COOKE, FRANCES HELLMAN, University of California, Berkeley — The magnetic and electronic properties of thin films of Cr are critical to their use in GMR multilayers and are not the same as bulk Cr. For example, itinerant spin density waves have been shown to be suppressed in thin films of Cr. This suppression has been attributed to disorder in the microstructure of the films. For bulk Cr the electronic contribution to the heat capacity $\gamma=3.5$ J/mol·K² for non-magnetic Cr and $\gamma=1.4$ J/mol·K² for magnetic Cr. Recent heat capacity measurements on Cr thin films have found $\gamma=3.2$ J/mol·K² in agreement with the nonmagnetic bulk value. These Cr films also have a reduced θ_D with respect to the bulk and indicate a softening of phonon modes as seen in nanocrystalline materials. We present magnetization and heat capacity results for Cr thin films.

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