

Abstract Submitted
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Temperature-dependent dielectric function of nickel¹ STEFAN ZOLLNER, T.N. NUNLEY, D.P. TRUJILLO, L.G. PINEDA, L.S. ABDALLAH, NMSU — Confirming historical results from Ornstein and Koefoed (1938), we found an anomaly in the optical constants at 1.96 eV for bulk nickel near the Curie temperature through careful high-precision spectroscopic ellipsometry measurements from 80 to 800 K. The anomaly is only seen in sweeps with increasing temperature if the sample carries a net magnetization. In decreasing temperature sweeps or for unmagnetized samples, the anomaly is absent. The sign of the anomaly in the optical conductivity at 1.96 eV is in contrast to the sign of the anomaly in the electrical DC conductivity. The anomaly is rather large and therefore explained with changes in the on-diagonal Drude–Lorentz portion of the dielectric tensor. No sign of anisotropy (polar magneto-optical Kerr effect) is found in the data.

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Stefan Zollner
NMSU

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