Magnetic X-Ray Scattering at the Holmium M_5 Resonance

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Abstract

Magnetic x-ray scattering from thin Ho-metal films at the M_5 resonance reveals atomic scattering lengths up to $200r_0$, *i.e.* of the same order of magnitude as predicted theoretically by Hannon *et al.* [Phys. Rev. Lett. **61**, 1245 (1988)]. The photon-energy dependence of first- and second-order magnetic satellites allows a straightforward identification of circular and linear dichroic contributions. A direct comparison to magnetic neutron scattering demonstrates the potential of the method for studies of complex magnetic structures in ultrathin films and highly diluted materials.

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