

Abstract No. seel84

Multilayer Gratings with High Normal-Incidence Efficiencies for 9-40 nm Wavelengths

J. Seely (Naval Research Laboratory)

Beamline(s): X24C

Introduction: Multilayer holographic gratings with Mo/Y and MoRu/Be coatings were developed for wavelengths 9 nm and 11.4 nm, respectively, and gratings with Sc/Si multilayers were developed for the 40 nm region. Thin barrier layers were studied for the purpose of preventing the interdiffusion of the primary layers and thereby enhancing the efficiencies of the gratings.

Methods and Materials: The X24C reflectometer was utilized to measure the grating efficiencies as functions of the angle of incidence and the incident wavelength.

Results: Normal-incidence efficiencies of 3% to 10% were achieved in the <11.4 nm region and 7% in the 40 nm region.

Acknowledgments: This work was sponsored by NASA and was carried out in collaboration with LLNL and the Lebedev Physical Institute.

Reference: C. Montcalm, S. Bajt, and J. F. Seely, "MoRu-Be Multilayer-Coated Grating with 10.4% Normal-Incidence Efficiency near the 11.4 nm Wavelength," *Opt. Lett.*, **26**, 125 (2001).