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The Effect of RF Sputter Deposition on MgF2 Thin Films¹ PEADAR MCGRATH, St. Norbert College, MAGNETIC MATERIALS AND DYNAMICS LABORATORY, UNIVERSITY OF SOUTH FLORIDA COLLABORATION² — Optical and physical properties of magnesium fluoride (MgF2) thin films were investigated. The films were grown on glass microscope slides using radio frequency magnetron sputter deposition. Thickness of the thin films were determined using data from x-ray reflectivity measurements. The stoichiometric ratios of the films were confirmed using measurements from energy dispersive x-ray spectroscopy. Values for the reflection and transmission coefficients were calculated from direct measurements of the intensities of a helium neon laser beam through the films and substrates. After preliminary measurements of physical properties, several films were annealed to various temperatures and the measurements were retaken. The relationship between thickness and optical properties was investigated, but the results were inconclusive due to the presence of absorption of light in the thin films, suggesting impurities in the film. These results will lead to a greater understanding of the effect of sputter deposition on optical properties of anti-reflective coatings, but further work will be necessary to minimize the impurities of the film and the light being absorbed.

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