An In-House Thermal Evaporation System for Anti-Reflection Coating of Laser Diodes

SARAH NAGEL, DUONG NGUYEN, THOMAS KILLIAN, RANDALL HULET, Department of Physics and Astronomy and Rice Quantum Institute, Rice University, Houston 77251 — Laser diodes have become a very popular and powerful tool in AMO research due to their frequency tunability, small size and low cost. These devices are often used in external cavity diode lasers (ECDL) and injection locked amplifiers. In both cases, in order to maintain frequency stability, the reflectivity of the diode facet must be as low as possible. Anti-reflection coating these devices is a commercially available, but rather expensive, procedure. In this poster, we present an in-house thermal evaporation system designed for coating diode lasers with SiO in a vacuum chamber capable of reaching $10^{-5}$ torr. We monitor the coating process by measuring the threshold current of the laser diode in-situ. We present reflectivity and coating stability results.