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Transport and magnetic properties of thin films fabricated by magnetron sputtering HIROTO KATO, TY NEWHOUSE-ILLIGE, HAMID ALMASI, WEIGANG WANG, University of Arizona — Magnetron sputtering is a widely used technique for fabricating various thin film structures. We will present the design and construction of an ultra-high vacuum magnetron sputtering system. By avoiding the use of O-ring seals and using small chambers as the enclosure, the system maintains UHV efficiently and keeps the pumping time short. The small system size also worked economically well. This system has three sputtering guns for depositing metals or oxides. All sputtering guns are capable of accepting 1.5 and 2-inch targets. The designs have the capability of heating samples up to 800C while being sputtered and transferring the sample into another chamber without exposing samples to air. These greatly enhance our ability of thin film growth and reduce a risk of cross-contamination of systems or within a system. We will discuss the structural, magnetic and transport properties of the thin films fabricated by this system.

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