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Magnetic Behavior of Multilayered [Co/Pt] Thin Films[1] AARON GENTILLON, CARSON RICHARDS, Brigham Young University, LUIS ORTIZ, JEREMY METZNER, BYU REU Program, DAVID MONTEALEGRE, ANDREW WESTOVER, KARINE CHESNEL, Brigham Young University — I will present a study of the behavior of magnetic domains in multilayered [Co/Pt] thin films. The basic thin film structure is an alternation of Cobalt layers of thickness X and 7 Å Platinum layers. There are eight different thicknesses, (X=4,8,12,16,25,31,40,60 Å). Using Atomic/Magnetic Force Microscopy, we estimated the density of magnetic domains at remanence after the application of a certain magnetic field perpendicular to the film. To study the domain density's dependence on the magnitude H_m of the applied field, we applied a series of magnetization loops to the samples via Vibrating Sample Magnetometer. Each sample was studied through an ascending and descending series of loops from 0 T up to 9 T and vice versa. Our results have shown in each sample that there is a value H* of H_m for which the domain density is maximized. We observed that X=31 Å has a higher peak than the other thicknesses. The ascending and descending series seem to have their density peaks in approximately the same places, but the descending series generally have higher peaks. Also, we completed a pumping study in which H* is applied multiple times in a row to observe if the domain density would increase. We found that pumping H* didn't show any correlation to increasing the domain density.

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