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Novel geometry for simultaneous resistive, Hall and optical measurement of MgH_x thin films D.W. KOON, C. C. W. GRIFFIN, St. Lawrence University, J.R. ARES, F. LEARDINI, C. SANCHEZ, Universidad Autónoma de Madrid — We describe a novel specimen geometry we have used to simultaneously probe optical transmission, sheet resistance and sheet Hall resistance in 100nm Mg films during hydrogen absorption. A Mg-film cloverleaf overlaps four rectangular Pd pads at the corners of a glass slide, a variation on a two-pad geometry used by Ingason and Olafsson for resistive studies of Pd-capped MgH_x films [J. Alloys and Compounds **404- 406** (2005), 469-72.]. Hydrogen diffuses laterally through the Pd pads before entering the magnesium layer from below. The sample holder also includes an LED-photodiode pair for measuring [monochromatic] optical transmission. We show that the simultaneous measurement of these three quantities during the metal-to-insulator transition in a hydriding MgH_x film allows for a more complete understanding of the hydriding process in these films.

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