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Multiple Incidence Media in Ellipsometry to Determine Both Refractive Index ‘n’ and Thickness ‘d’ of Very Thin Dielectric Layers. DOUGLAS NGATUNYI, North Carolina Central University, JEREMY PETERS, HANS HALLEN, North Carolina State University — Ellipsometry is a powerful technique for measuring thin film thickness and index of refraction, widely used in both industry and research. A limitation of the technique is found with ultrathin samples, for which errors in the derived values permit measurement of only one of the thickness or index of refraction, rather than both as for thicker samples. A value for the other must be assumed. We investigate the use of multiple input media to allow measurement of both parameters, the index of refraction and the thickness, of ultrathin films. In particular, air, water, and hexadecane were used as media. Standard ellipsometric analysis failed, but we determined both thickness and index with a modified method that minimizing the variation of the thickness over the measurements in all media. Samples used were PEDTA and SiO_2 .

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