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Unique refractive index and thickness values for polymer films via ellipsometry ALAN R. ESKER, UFUK KARABIYIK, MIN MAO, Virginia Tech, Department of Chemistry (0212), Blacksburg, VA 24061, SUSHIL K. SATIJA, Center for Neutron Research, National Institute of Standards and Technology, Gaithersburg, MD 20899 — In this study, elliposometry using multiple ambient media at Brewster's angle is used to determine unique values of refractive index and film thickness for polymer thin films. Measurements were made for polymer thin films on HF etched silicon wafers against air and water. Results obtained for poly(t-butyl acrylate), polystyrene, and trimethylsilyl cellulose confirm that the refractive indices agree well with the literature values and that the film thicknesses agree with values obtained from X-ray reflectivity. This technique provides a rapid unambiguous method for determining a film's thickness and refractive index for polymers.

Alan R. Esker

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