

Abstract Submitted  
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**Probing Adsorption and Thin-Film Growth with Optical Reflectance.** KRISH KOTRU, ROGER TOBIN, Tufts University — Optical reflectance provides a simple, inexpensive, noninvasive and sensitive method of monitoring adsorption and thin-film growth on metals in real time. Conduction electron scattering from isolated surface impurities decreases the near-surface electrical conductivity and causes a drop in reflectance. For chemisorbed species, the reflectance decreases monotonically and then saturates with completion of the adsorbed monolayer. Our probe, based on a modified laser pointer, can follow adsorption of oxygen and carbon monoxide on Cu(100) in ultrahigh vacuum with submonolayer sensitivity. We also monitor the deposition of Fe and Cu thin films on the same surface, and for layer-by-layer growth expect to see an oscillatory variation of reflectance in which local maxima correspond to the completion of each atomic layer.

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