

Abstract Submitted  
for the MAR13 Meeting of  
The American Physical Society

**Advances in Surface Plasmon Resonance Imaging enable quantitative measurement of laterally heterogeneous coatings of nanoscale thickness** ADAM RAEGEN, KYLE REITER, University of Guelph Department of Physics, ANTHONY CLARKE, University of Guelph Department of Molecular and Cellular Biology, JACEK LIPKOWSKI, University of Guelph Department of Chemistry and Biochemistry, JOHN DUTCHER, University of Guelph Department of Physics — The Surface Plasmon Resonance (SPR) phenomenon is routinely exploited to qualitatively probe changes to the optical properties of nanoscale coatings on thin metallic surfaces, for use in probes and sensors. Unfortunately, extracting truly quantitative information is usually limited to a select few cases – uniform absorption/desorption of small biomolecules and films, in which a continuous “slab” model is a good approximation. We present advancements in the SPR technique that expand the number of cases for which the technique can provide meaningful results. Use of a custom, angle-scanning SPR imaging system, together with a refined data analysis method, allow for quantitative kinetic measurements of laterally heterogeneous systems. We first demonstrate the directionally heterogeneous nature of the SPR phenomenon using a directionally ordered sample, then show how this allows for the calculation of the average coverage of a heterogeneous sample. Finally, the degradation of cellulose microfibrils and bundles of microfibrils due to the action of cellulolytic enzymes will be presented as an excellent example of the capabilities of the SPR imaging system.

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Date submitted: 09 Nov 2012

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