

Abstract Submitted
for the MAR12 Meeting of
The American Physical Society

Surface Plasmon Resonance Imaging of the Enzymatic Degradation of Cellulose Microfibrils KYLE REITER, ADAM RAEGEN, Department of Physics, University of Guelph, ANTHONY CLARKE, Department of Molecular and Cellular Biology, University of Guelph, JACEK LIPKOWSKI, Department of Chemistry, University of Guelph, JOHN DUTCHER, Department of Physics, University of Guelph — As the largest component of biomass on Earth, cellulose represents a significant potential energy reservoir. Enzymatic hydrolysis of cellulose into fermentable sugars, an integral step in the production of biofuel, is a challenging problem on an industrial scale. More efficient conversion processes may be developed by an increased understanding of the action of the cellulolytic enzymes involved in cellulose degradation. We have used our recently developed quantitative, angle-scanning surface plasmon resonance imaging (SPRi) device to study the degradation of cellulose microfibrils upon exposure to cellulosic enzymes. In particular, we have studied the action of individual enzymes, and combinations of enzymes, from the *Hypocrea Jecorina* cellulase system on heterogeneous, industrially-relevant cellulose substrates. This has allowed us to define a characteristic time of action for the enzymes for different degrees of surface coverage of the cellulose microfibrils.

Adam Raegen
Department of Physics, University of Guelph

Date submitted: 11 Nov 2011

Electronic form version 1.4