Abstract Submitted
for the MAR07 Meeting of
The American Physical Society

Real-time detection of multiple biomolecular reactions on a functionalized glass surface using a scanning oblique-incidence optical reflectivity difference (an ellipsometric technique).[1] YUNG-SHIN SUN, JAMES P. LANDRY, XIANGDONG ZHU, Dept. of Physics, Univ. of California at Davis — One of the enabling platforms in proteomic research is parallel (high-throughput) detection of multiple biomolecular interactions on a microarray. To keep conformational and in turn functional integrity of protein molecules, label-free detection is desirable. We have developed an oblique-incidence optical reflectivity difference (OI-RD) technique for label-free measurements of protein reactions with molecular targets in microarray format immobilized on functionalized glass surface. As an ellipsometric technique, OI-RD measures changes in thickness and/or optical dielectric response instead of fluorescence. By incorporating total internal refection geometry and a multi-element photodiode array detector, we demonstrate how such the OI-RD technique can be efficiently used to measure multiple protein reactions in real time with surface-immobilized molecules or molecular groups on a glass substrate.

[1]This work is supported by NSF Center for Biophotonics Science and Technology, UC-GREAT, and NIH.

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Date submitted: 29 Nov 2006 Electronic form version 1.4