

Abstract Submitted
for the MAR07 Meeting of
The American Physical Society

Detection of cancer protein using Spectroscopic Ellipsometry as Surface Plasmon Resonance Mode YUNBOG KIM, DONGRYUL JEON, Seoul National University, Department of Physics Education and Nano Systems Institute, Seoul 151-748, Korea, MIN-AH WOO, MYUNGHAING CHO, Seoul National University, College of Veterinary Medicine and Nano Systems Institute, Seoul 151-748, Korea — Since the first application of surface plasmon resonance (SPR) for biosensing almost two decades ago, SPR has made great strides in terms of both the instrumentation and the application. We used spectroscopic ellipsometry as an SPR sensor to detect the reaction of HER2 protein of SKBR3 cancer cells with its antibody. Since the Psi value of ellipsometry is related to the reflectivity of P wave, the surface plasmon signal can be measured using spectroscopic ellipsometry. A glass plate coated with 50 nm-thick gold film was dipped in HER2 antibody solution for 1 hour. The substrate was then dipped in a soup containing broken SKBR3 cells to induce HER2 antibody-antigen reaction. The pure gold film exhibited a SPR peak at 2.04 eV. After the adsorption of HER2 antibody, the peak shifted to 1.99eV. After dipping in the soup of SKBR3 cells, the peak shifted to 1.96 eV. We believe this shift is due to the change in surface plasmon caused by binding of HER2 protein and antibody. The AFM images of the samples supported our conclusion. Our result adds an example to the possibility of using spectroscopic ellipsometry as an SPR mode for detecting cancer cells.

Yunbog Kim
Seoul National University, Department of Physics Education and
Nano Systems Institute, Seoul 151-748, Korea

Date submitted: 06 Dec 2006

Electronic form version 1.4