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Surface plasmon enhanced spectroscopic ellipsometry based sensor for studying bio-molecular interaction RAKESH MOIRANGTHEM, YIA-CHUNG CHANG, SHIH-HSIN HSU, PEI-KUEN WEI, Research Center for Applied Sciences, Academia Sinica, Taiwan — We investigate bio-molecular interaction using rotating analyzer spectroscopic ellipsometry integrated with prism and flow cell. By recording the ellipsometry data in terms of relative change in ψ , Δ as sensor signal we can observe the plasmonic response on the gold thin film with aqueous medium having different refractive index or the existence of a dielectric layer on the surface. We observed larger spectral shift of the features in ψ and Δ versus the change of refractive index of the ambient medium as observed in conventional SPR system. Our simple experimental setup has an index of resolution of the order of 1.54×10^{-6} which is much better than previous reported values by using conventional SPR method based on angular detection or spectroscopic measurement. Such sensitivity with a very simple technique is almost comparable with that of the heterodyne detection which has complicated optical setup. This kind of characterization technique is non-destructive, label free and it has high sensitivity and sub-nanometer thickness resolution. Furthermore, investigation can be made in aqueous medium.

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