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Surface Plasmon Resonance enhancement via oblique thin film deposition on gratings ZHAOZHU LI, MICHAEL KLOPF, William and Mary College, GEORGE SCHWARTZ, University of Virginia, MATTHEW HEIMBURGER, LEI WANG, KAIDA YANG, ROSA LUKASZEW, William and Mary College — Surface plasmon resonance (SPR) occurs when light shines at a dielectric-metallic interface under certain configurations such that an evanescent polariton can be excited. This surface plasmon polariton travels across the interface exhibiting electric field intensity greatly enhanced with respect to the incident light, evidenced by the observation of a deep angular reflectivity scans at the resonance angle. To excite the SPR, one can use a diffraction grating coupler in order to satisfy the dispersion relationship, noting that within certain grating-groove aspect-ratio, the electric field intensity in the surface polariton can be further enhanced by increasing the grating amplitude. We have applied oblique shadow deposition (OSD) to deposit metallic layers onto gratings to enhance their grating amplitudes and compare them to films deposited at normal incidence. We report on the effects on the SPR of such configurations, by comparing the results of OSD samples with those for normal incident deposited samples.

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