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Silicides for infrared surface plasmon resonance biosensors J.W. CLEARY, R.E. PEALE, University of Central Florida, Orlando FL , W. BUCHWALD, R. SOREF, AFRL/RYHC Hanscom AFB MA 01731 — Biomolecules on a conductor strongly affect its surface plasmon modes, providing for real-time sensing of biomolecules. We consider silicides for IR plasmonic biosensors. The lower plasma frequency of silicides relative to metals shifts the plasmon dispersion curve farther from the light line in the IR, enhancing resonances in the attenuated total reflection (ATR) configuration. Better mode confinement on silicides increases sensitivity to near-surface biomolecules. Higher silicide surface impedance gives more efficient IR-to-plasmon coupling by gratings. We experimentally determine the IR permittivity for industrially-relevant Pt-, Pd-, Ni-, and Ti-silicides. IR surface plasmon properties including mode profiles, propagation lengths, ATR lineshapes, and grating coupling efficiencies are then calculated. Experimental surface plasmon resonance data at CO_2 laser wavelengths are then presented for both ATR and grating configurations.

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