

Abstract Submitted
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SPR Effect in Nichrome Alloy CHRIS LEIBS, IAN ROSS, MAARIJ SYED, AZAD SIAHMAKOUN, Rose-Hulman Institute of Technology — We have performed surface plasmon resonance (SPR) experiments in the Kretschmann configuration on prisms coated with 500 ± 10 nm single metal and alloy thin-films. The thin films are grown by magnetron sputtering and are binary alloy films (Nickel/Chrome with 80/20 concentration). In addition, for comparison we will also present results for pure metal films (Nickel and Chromium). We have observed a pronounced SPR signal at $41.24^\circ \pm 0.01$ at 633 nm for the Nichrome film while neither of the metal thin-films (Ni or Cr) yields an SPR effect. Aided by the surface morphology and the SPR signal observations, we modeled the effective dielectric constant of the metal alloy by comparing the SPR response of the alloy to that of the individual metal films. We will also show how SPR results can be better understood by analyzing the SPR data correlated with ellipsometric data obtained from these films as well as x-ray analysis (for composition and structure information), and AFM analysis (for surface topography).

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