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Investigation of Nanowire Thickness and Enhancement Characteristics CAMERON SAYLOR, DESALEGN DEBU, University of Arkansas Fayetteville, ERIC NOVAK, Shippensburg University, JOSEPH HERZOG, University of Arkansas Fayetteville — This work investigates of the effect of nanowire thickness on the optical enhancement of nanowire. We present a study that shows there is potential in altering the thickness of plasmonic structures to improve their optical field enhancement. The study was performed using a finite element method computational electromagnetic analysis, which allows for the thickness and width of the nanowire and wavelength of the incident light to be changed, and the corresponding effects on the optical enhancement characteristics of the structure to be measured. The nanowire was modeled using a two-dimensional cross-section that approximates the nanowire as being infinitely long, with the incident light polarized perpendicular to the length of the nanowire. Preliminary results suggest that lower nanowire thickness provide the highest optical enhancement. The effects of the material and thickness of the adhesion layer on the optical enhancement of the nanowire are also investigated.

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