Computational Design of Tunable UV-Vis-IR Filters Based on Silver Nanoparticle Arrays[1] MICHAEL WATERS, GUANGSHA SHI, EMMANOUIL KIOUPAKIS, Univ of Michigan - Ann Arbor — We propose design strategies to develop selective optical filters in the UV-Vis-IR spectrum using the surface plasmon response of silver nanoparticle arrays. Our finite-difference time-domain simulations allow us to rapidly evaluate many nanostructures comprising simple geometries while varying their shape, height, width, and spacing. Our results allow us to identify trends in the filtering spectra as well as the relative amount of absorption and reflection. Optical filtering with nanoparticles is applicable to any transparent substrate and can be easily adapted to existing manufacturing processes while keeping the total cost of materials low.

Michael Waters
Univ of Michigan - Ann Arbor

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