Abstract Submitted
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Plasmonic mode coupling of silver nanoparticles through thin dielectric films[1] ANDREA GOERING, MIRIAM DEUTSCH, University of Oregon — Tunable optical performance at the nanoscale can be engineered by coupling elementary plasmonic modes in new ways, for application to enhanced absorption in polymer photovoltaic devices. Plasmonic mode coupling in systems of solution-processed films with diverse and tunable morphologies represents an economic alternative to lithographically-defined systems, yet interactions between localized plasmons in solution-processable material systems have not been as well-explored as their lithographic counterparts. We seek to characterize plasmonic mode coupling in an architecture consisting of a thin dielectric spacer layer sandwiched between two layers of sparse disordered silver nanoparticles. Coupling is observed in UV-vis spectroscopy as a spectral splitting in the hybridized mode structure, as the plasmons supported on each silver layer couple through the dielectric. We explore the tunability of this coupling by modifying the spacer layer thickness, and compare behavior in systems containing non-absorbing and absorbing spacer layers.

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Andrea Goering
Univ of Oregon

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