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Plasmonic Nanostructures: Artificial Molecules

The "plasmon hybridization" concept, [1] shows that the plasmon resonances in complex metallic nanostructures interact and hybridize in an analogous manner as atomic wavefunctions in molecules. The insight gained from this concept provides a conceptual foundation for the development of new plasmonic structures that can serve as substrates for surface enhanced spectroscopies, chemical and biosensing, subwavelength waveguiding, photocatalysts, and other light harvesting applications. The talk is comprised of basic overview material for a general audience interspersed with a few more specialized "hot topics" such quantum plasmonics,[2] aluminum plasmonics,[3] graphene and molecular plasmonics,[4] plasmon-induced vapor generation,[5] active plasmonic nanoantennas for enhanced light harvesting, hot carrier generation, and photocatalysis.[6]

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