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**Effects of exciton-plasmon coupling in zinc oxide thin films and nanowires**

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Zinc oxide with a direct bandgap of 3.35 eV has been studied extensively in the forms of thin films and nanostructures because of its potential applications in optoelectronics, sensing and nanolasers. Its optical emission spectrum is characterized by two principal emission bands: a sharp band-edge exciton emission line in the ultraviolet, and a broad emission band centered around 2.33 eV generally believed to come from a variety of donor-acceptor defects. In this talk, I will discuss recent experiments that show how to use plasmonic nanostructures in the form of rough metallic surfaces and metal nanoparticles to control the optical emission characteristics of ZnO thin films and nanowires. The principal results include: (1) The enhancement of the band-edge emission over the defect emission by a factor of nearly 100 even in highly defective thin films by coupling to surface plasmon polaritons; (2) femtosecond laser studies of emission from ZnO/MgO interfaces that show that the donor-acceptor pairs are found principally at surfaces and interfaces; and (3) recent results from ZnO/MgO core/shell nanowires that show how Fabry-Perot cavity modes in the nanowires experience differential band-edge emission rates depending on their coupling to the localized surface-plasmon resonance of Ag nanoparticles. In conclusion, the implications of this last finding for ultraviolet nanolasers will be discussed.