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AFM assembly and optical characterization of individual hybrid nanostructures[1] DANIEL RATCHFORD, FARBOD SHAFIEI, SUENNE KIM, XIAOQIN LI, Department of Physics, University of Texas at Austin — Interactions between the different components of hybrid nanostructures allow for structures with versatile functionality. The properties of such hybrid structures sensitively depend on composition and geometry. Therefore, intrinsic properties can only be revealed in experiments performed on individual nanostructures with well controlled geometries. Our experiment uses AFM nanomanipulation to assemble individual hybrid nanostructures consisting of single CdSe/ZnS quantum dots near metallic nanoparticles. We then characterize the structures' optical decay rates with confocal microscopy. Metallic nanoparticles change the local photon density, and therefore, are expected to modify the quantum dot decay dynamics. In our preliminary results, we observe an increase in the total decay rate for single CdSe/ZnS dots coupled to silver nanoparticles.

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