

Abstract Submitted
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Strong coupling of single optical emitters to nano-scale surface plasmons ARYESH MUKHERJEE, Harvard University, ALEXEY AKIMOV, Harvard University, P.N. Lebedev Physical Institute, ALEXANDER ZIBROV, DARRICK CHANG, Harvard University, ANDERS SORENSEN, Niels Bohr Institute, CHUN YU, HONGKUN PARK, Harvard University, PHILIP HEMMER, Harvard University, Texas A&M University, MIKHAIL LUKIN, Harvard University — We present an experimental observation of strong optical coupling between individual, nanocrystal CdSe/ZnS quantum dots and the guided surface plasmon modes of a proximal silver nanowire. The strong coupling between emitter and field is enabled by the unique properties of the plasmon modes on these nanowires. In particular, due to the small size of the nanowires (~ 100 nm in diameter), the surface plasmons are localized transversely to dimensions well below the diffraction limit. An enhancement of the Purcell factor of the system and photon correlations consistent with a single-photon source are observed, and a realistic theoretical model for these processes is presented.

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