

Abstract Submitted
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Excitonic Contribution to Near-Field Enhancements of a Carbon Nanotube Antenna¹ BENJAMIN SOFKA, SLAVA V ROTKIN, Lehigh University — Complexes containing rare earth ions (REI) and single-walled carbon nanotubes (SWNT) show promise to be utilized for the optical sensing of biomolecules. We theoretically study the near-field electromagnetic effects in such a system using a propagating polariton model for the SWNT antenna. To be in resonance with the REI transitions that are in the NIR/optical range, excitonic transitions in the SWNT must be included in the model. We calculate measurable field enhancements in the vicinity of the SWNT antenna that lead to an increase of the REI photoluminescence.

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