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Enhancement of Resonant Energy Transfer Due to Evanescent-wave from the Metal AMRIT POUDEL, Northwestern University, XIN CHEN, Xi'an Jiaotong University, MARK RATNER, Northwestern University — The high density of evanescent modes in the vicinity of a metal leads to enhancement of the near-field Forster resonant energy transfer (FRET) rate. We present a mathematical formulation based on classical electromagnetic theory using the dyadic Greens function and investigate the effect of metallic environment using material permittivity in local and nonlocal limits, which provides better estimates of the transfer rate at small separations from the metal. Furthermore, we present a general formula of FRET rate for multiple donors and acceptors in the presence of arbitrary dielectric environment and discuss the path interference effect on FRET rate.

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