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Plasmonic Enhancement of Förster Energy Transfer at a Metallic Nanoshell: nonlocal optical effects PUI TAK LEUNG, H.Y. XIE, H.Y. CHUNG, DIN PING TSAI, NATIONAL TAIWAN UNIVERSITY COLLABORATION, PORTLAND STATE UNIVERSITY COLLABORATION — The problem of Förster resonance energy transfer (FRET) between two molecules in the vicinity of a metallic nanoshell is studied within a phenomenological model which takes into account the nonlocal optical response of the metal. This model allows for arbitrary locations and orientations of the two molecular dipoles with respect to the nanoshell which can be of ultra-small sizes (< 10 nm) and for which nonlocal effects are of high significance. Numerical results show that the resonances in the enhanced FRET rate will be dominated by the multipolar bonding and antibonding cross-coupled plasmonic modes of the nanoshell; and that the nonlocal effects will generally lead to blue-shifted resonances, as well as diminution of the enhancement for the low-frequency portions of both modes.

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