Inhomogeneous broadening in non-interacting nonlocal plasmonic ensembles - DTU Orbit (03/12/2018)

Inhomogeneous broadening in non-interacting nonlocal plasmonic ensembles

The importance of inhomogeneous broadening due to the size dependence of plasmon resonances in few-nm metallic particle ensembles is investigated through different models describing the nonlocal optical response of plasmonic nanospheres. Modal shifts and plasmon line broadening are shown to become important within the first-order correction to classical electrodynamics provided by the hydrodynamic Drude model, but turn out to be less prominent once additional single-particle size-dependent damping mechanisms are accounted for through the recently developed Generalized Nonlocal Optical Response theory. Our work is therefore expected to provide insight and facilitate the design of nanoscale spectroscopy experiments.

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