Inhomogeneous broadening in non-interacting nonlocal plasmonic ensembles - DTU Orbit (16/12/2018)

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.

General information
State: Published
Organisations: Department of Photonics Engineering, Structured Electromagnetic Materials, Center for Nanostructured Graphene, Department of Micro- and Nanotechnology, University of California
Contributors: Tserkezis, C., Maack, J. R., Liu, Z., Wubs, M., Mortensen, N. A.
Pages: 367-9
Publication date: 2016

Host publication information
Title of host publication: Proceedings of 2016 10th International Congress on Advanced Electromagnetic Materials in Microwaves and Optics
Publisher: IEEE
ISBN (Print): 978-1-5090-1803-1
(2016 10th International Congress on Advanced Electromagnetic Materials in Microwaves and Optics (metamaterials)).
Keywords: Nanophotonic devices and technology, Statistical models of strong interactions, Collective excitations (surface states), hydrodynamic model (elementary particles), nanophotonics, plasmonics, inhomogeneous broadening, plasmon resonances, plasmonic nanospheres, modal shifts, plasmon line broadening, first-order correction, electrodynamics, hydrodynamic Drude model, generalized nonlocal optical response theory, nanoscale spectroscopy, Plasmons, Nonhomogeneous media, Resonant frequency, Damping, Metamaterials, Adaptive optics, Distribution functions
Electronic versions:
InhomogeneousNonolocalBroadening_Metamaterials2016_Revised.pdf
DOIs:
10.1109/MetaMaterials.2016.7746402
Source: FindIt
Source-ID: 2349186060
Research output: Research - peer-review › Article in proceedings – Annual report year: 2016