4 layer model

electric permittivity given by Drude-Lorentz(DL) model:

isotropic polarizability of each free standing NP (using quasi-static dipolar approximation)

due to light being comprised of s and p polarised light then the quasistatic polarisabilyt can be expressed as

the image-charge screening factor for the film is given as

the lattice dependents parameters for a hexagonal lattice are given by

meaning that for the NP layer the parallel and perpendicular components correspond to

from the transfer matrix the reflection and transmittance can be calculated by

so

then

where: