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Fano-like scattering in nanocomposites

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Abstract content
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In this study, the scattering properties of metal/dielectric composites in active host matrices are studied theoretically. We have calculated the effective polarization for spherical nanocomposites and silver plasma frequency (ω_p) to realize the appearance of Fano in the nanocomposites. It is shown that Fano resonances appear as the result of effective polarizability (α) of the inclusions. The negative value of the active host matrices reduce absorption and provide the conditions for Fano resonances. The analysis of the scattering cross-section for spherical inclusion with frequency dependent dielectric function of the core of the incident plane wave shows two resonances as the external field is enhanced. The presence of Fano-like resonances for spherical inclusions depends strongly on the effective polarizability of the inclusion. However we have carried out calculations under long wave approximation, in future we need to carry out experiment for our model to observe the spectra's for different nanocomposites.

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