

## Multishell generic cloaking device

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**Abstract:** In this study we proposed a technique to realize a multi-shell generic cloaking system. By considering specific geometrical and material properties for the shells around the object, we were able to achieve a transparency condition independent of the object's optical and geometrical properties in the quasi-static regime. A complete suppression of dipolar scattering is demonstrated for an arbitrary object enclosed in both cylindrically and spherically symmetric systems. We also proposed tunable-low loss realistic shell designs based on composite media. The effects due to dissipation and dispersion on the overall scattering cross-section are thoroughly evaluated. Full wave numerical simulations based on the transparency conditions obtained in the quasi-static limit are performed. It is shown that a strong reduction of the scattering by a factor of up to  $10^3$  can be achieved across the entire optical spectrum. The proposed cloaking structure does not require optical magnetism and is generic in the sense that it is independent of the object's material and geometrical properties.