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Title:	Generalized Lorenz-Mie theory for the reversal of optical force in a nonlinear laser trap
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Abstract:	Hybrid nanoparticles have gained intense attention in the field of optical trapping due to their potential wide-ranging applications, for example, in drug delivery. The utility of the optical Kerr effect in modulating trapping force and potential under high-repetition-rate ultrafast pulsed excitation has recently been realized for dielectric and metallic particles ranging from micron to nanometer. However, in the context of hybrid nanoparticles, the mechanism of trapping is yet to be fully explored. Here, we present a comparative study of trapping force and potential on conventional, hybrid, and hollow-core type nanoparticles using generalized Lorenz-Mie theory and dipole approximation incorporating third-order optical nonlinearity. We find an explicit advantage of using pulsed excitation over continous-wave excitation which can have potentially far-reaching practical applications.
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