Title:	Enhanced optical force on multilayered dielectric nanoparticles by tuning material properties and nature of excitation: a theoretical investigation
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Abstract:	Using dipole approximation, a comparative study of trapping force/potential on different types of dielectric nanoparticles is presented. The trapping force for multilayered nanoparticles, i.e. core–shell–shell type nanoparticles, is found to be enhanced compared with both core-only type and core–shell type nanoparticles. It is shown that an appropriate choice of material and thickness of the middle layer results in tuning the polarizability, thereby playing a vital role in determining the trapping efficiency for core–shell–shell type nanoparticles. Further, the effect of optical nonlinearity under femtosecond pulsed excitation is investigated and it is elucidated that depending on the specific need (i.e. high force versus long confinement time), the nature of excitation (i.e. pulsed excitation or continuous-wave excitation) can be judiciously chosen. These findings are promised to open up new prospects for controlled nanoscale trapping and manipulation across different fields of nanoscience and nanotechnology.
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