

Abstract Submitted  
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**Vibrational modes of metal core/dielectric shell nanoparticles<sup>1</sup>**

ARMAN KIRAKOSYAN, TIGRAN SHAHBAZYAN, Jackson State University, Department of Physics — We study theoretically the spectrum of radial vibrational modes in composite spherical nanoparticles with metal core and dielectric shell in an environment. We calculate frequency and damping rate of the fundamental (breathing) mode and find that they are significantly higher than those for solid metal particles of the same overall size. For excited modes, we find that both frequency and damping rate exhibit pronounced oscillations as a function of aspect ratio and the frequency of higher modes is nearly independent of the environment, while the damping rate shows strong sensitivity to outside medium.

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