

Abstract Submitted
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Thermo-optical Properties of Gold Nanoparticles and Carbon Nanotubes: Characterization of Heat Generation¹ PEDRO L. HERNANDEZ-MARTINEZ, Department of Physics and Astronomy, HUGH H. RICHARDSON, Department of Chemistry and Biochemistry, ALEXANDER O. GOVOROV, Department of Physics and Astronomy, OHIO UNIVERSITY TEAM — We investigate the system of optically excited nanostructures in a matrix aiming to understand heat generation at the nanoscale level. We study two kinds of structures: spherical gold nanoparticles (NPs) and carbon nanotubes (CNTs). The heating processes occur under light illumination and for Au NPs involve the plasmon resonance[1,2,3]. For the matrix, we consider air, AlGaN and Si. Theoretical calculations and experimental data are combined to make a quantitative measure of the amount of heat generated by optically excited Au NPs and CNTs. [1] Richardson H.H, Carlson M.T, Tandler, P.J, Hernandez P, Govorov A.O, Nano Letters 9(3) 1139-1146 (2009). [2] Govorov A.O, Richardson H.H, NanoToday 2(1) 30-38 (2007). [3] Govorov A.O, Zhang W, Skeini T, Richardson H., Lee J, and Kotov N, Nanoscale Res. Lett. 1:84–90 (2006).

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