Metallic Graphene Nanofibers and Their Applications to Nanotechnology and Nanomedicine

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Abstract: Recently there is considerable interest to study the plasmonic properties of nanofibers made of ensemble of metallic nanoparticles (MNPs) and quantum emitters (QEs). The study of nonlinear optical properties has the potential to reshape the physics of light-matter interactions and their applications to nanotechnology and nanomedicine. In this talk, we study the nonlinearity such Kerr effect on the plasmonic properties of graphene nanofibers. The effect of the dipole-dipole interaction between the graphene quantum dots will be also examined in nonlinear photoluminescence and the nonlinear Kerr spectroscopy. Finally, we will examine that these nanofibers can be used to fabricate the nanosensors and nanoswitches for the applications of nanotechnology and nanomedicine.