



School of Nano Science (IPM)



Condensed Matter & Statistical
Physics Group (IPM)

Weekly Webinar

Photothermal Therapy using Graphene Coated Plasmonic Nanoparticles for Cancer treatment

Speaker: **Dr. Mohsen Farokhnezhad**

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Iran*

Photothermal therapy (PTT) using plasmonic nanoparticles is one of the effective methods for cancer treatment. In PTT, the amount of temperature rise and the duration of therapy are two important factors which they greatly depend on the selection of appropriate nanoparticles. In this seminar, the optical and photothermal properties of graphene coated nanoparticles including gold, hollow gold-silver core using Mie, Gans and effective medium theories are investigated. Also, the temperature distribution of tumor tissue is calculated by bioheat transfer equations for various sizes and shapes. We show that the surface plasmon resonance (SPR) peak of graphene coated nanoparticles can be easily adjusted inside biological windows by increasing the graphene shell thickness and/or by changing their aspect ratio for spheroidal nanoparticles. Finally, we describe the extent of thermal damage in tumor tissue by using the Arrhenius equation. Our findings introduce a new class of nanoagents which can be used in PTT applications.

Wednesday, 23 September 2020 (۲ مهر ۱۳۹۹), 14:00-15:00

Virtual Meeting Room (please log in as a guest):

<https://www.skyroom.online/ch/schoolofphysics/school-of-nano-science>

