Tibor Gal et al., J Nanomed Nanotechnol 2014, 5:5
http://dx.doi.org/10.4172/2157-7439.S1.018

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4th International Conference on
Nanotek & Expo

December 01-03, 2014 DoubleTree by Hilton Hotel San Francisco Airport, USA

Polarization dependent interaction of plasmonic nanoparticles on semiconductor surface

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Plasmonic nanoparticles have received increased interest due to their numerous potential applications in the field of optics and optoelectronics. Currently such metallic nanoparticles are applied in semiconductor devices, such as light emitting diodes (LEDs) to couple out the light from the semiconductor. The interaction of nanoparticles with light is strongly dependent on the polarization, distance, and orientation of the nanoparticles. The object of this work is to investigate closely packed interacting nanoparticles to manipulate the polarization of the outcoming light for polarized LED application. It was designed an array of different nanoparticles, that operate as an optical antenna array, and direct the outcoupled light polarization selectively. It was calculated the far field pattern of the scattered field from the nanoparticle system for different polarizations. To calculate the optical properties of this problem we solve the Maxwell's equations with rigorous numerical methods.

Biography

Tibor Gál has completed his MSc in 2012 at Budapest University of Technology and Economics. Currently he is a PhD student at the Department of Atomic Physics at BUTE.

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