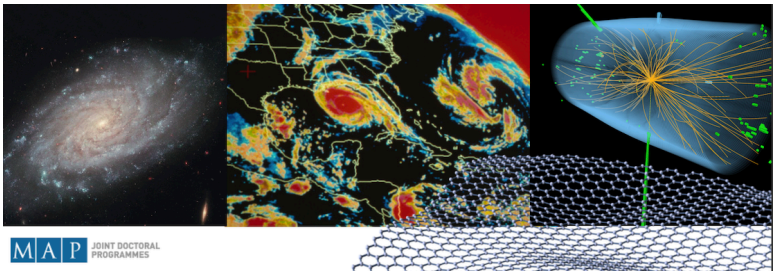

Contribution ID: **139** Type: **Contributed Talk (20 minutes)**

Fano resonances between the emission of J-aggregate-covered metallic nanorods and spherical cavity modes

We investigate, both experimentally and theoretically, photoluminescence (PL) spectra of J-aggregates (JC1) covering silver nanorods (AgNRs). When these hybrid nanoparticles (J-agg@AgNRs) are deposited on the surface of a spherical microcavity (MC), their non-resonantly excited PL spectra show a series of sharp resonances in the broad spectral range of 550 – 650 nm, characterized by Fano-type lineshapes.
We develop a semi-phenomenological model based on coupled-oscillator equations, which explains the observed spectra of the J-agg@AgNRs/MC system. In particular, it is shown that the complex Fano-type lineshapes are due to effective interaction of various whispering gallery modes of the microsphere, coupled to the J-agg@AgNR emitter. Our experimental results and their understanding qualify the investigated hybrid structure as a sensitive and controllable system, suitable for applications.

Which topic best fits your talk?

Condensed Matter Physics and Nanomaterials

Author: Mr CUNHA, Diogo (University of Minho)

Co-author: VASILEVSKIY, Mikhail

Presenter: Mr CUNHA, Diogo (University of Minho)