SEMINAIRE ISMO

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Novel hybrid plasmonic nanoemitters based on spatial anisotropy of the active medium

Plasmonic light-emitting nanosystems are attracting great attention for their applications in biology, information technology, and nano-optics.

Many reported studies have been carried out based on hybrid structures of metal nanoparticles combined with luminescent semiconductor quantum dots or organic dyes. Despite the numerous results obtained so far, the monochromaticity of the light emission prevents them from possible use as switchable color nano-emitters.

We developped two-color anisotropic nano-emitters (TCANEs) that enable the selection of the dominant emitting wavelength by varying the polarization of excitation light. The nano-emitters were fabricated via surface plasmon-triggered two-photon polymerization.

By using two polymerizable solutions with different quantum dots, emitters of different colors can be positioned selectively in different orientations in the close vicinity of the metal nanoparticles. The dominant emission wavelength of the metal/polymer anisotropic hybrid nano-emitter can thus be selected by altering the incident polarization.

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