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【241】 Core@multi-shell structures in helium droplets: Au nanoparticles covered by a hexane layer and rhodamine B fluorophores

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Nanoparticles comprising three different materials in a core@shell@shell configuration are synthesized in cold helium droplets by sequential doping. Rhodamine B molecules form complexes in helium droplets that give rise to a strong fluorescence upon laser excitation, enabling an *in situ* investigation of the synthesized structures. In the presence of a Au core, fluorescence from the rhodamine B shell is quenched due to excitation transfer from excited molecules to the Au particle. The addition of an intermediate hexane layer inhibits the contact between Au core and rhodamine B shell, which results in the recovery of the fluorescence.

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