Magnetically Tunable Plasmon Coupling of Gold Nanoshells

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BACKGROUND

Materials with strong localized surface plasmon resonance (LSPR) can find unique applications in wearable electronics, smart windows, color holograms, flexible displays, etc. Efficient scattering of light at a particular wavelength while being "transparent" at off-resonance is key to the effectiveness of these applications.

BRIEF DESCRIPTION

Prof. Yadong Yin and colleagues from the University of California, Riverside have developed a novel growth process that allows for the creation of high-quality Au nanoshells on relatively small magnetic Fe3O4 cores (20–150 nm) with excellent plasmonic properties. The nanoscale magnetic assembly strategy allows for active tuning of the plasmon coupling of nanostructures

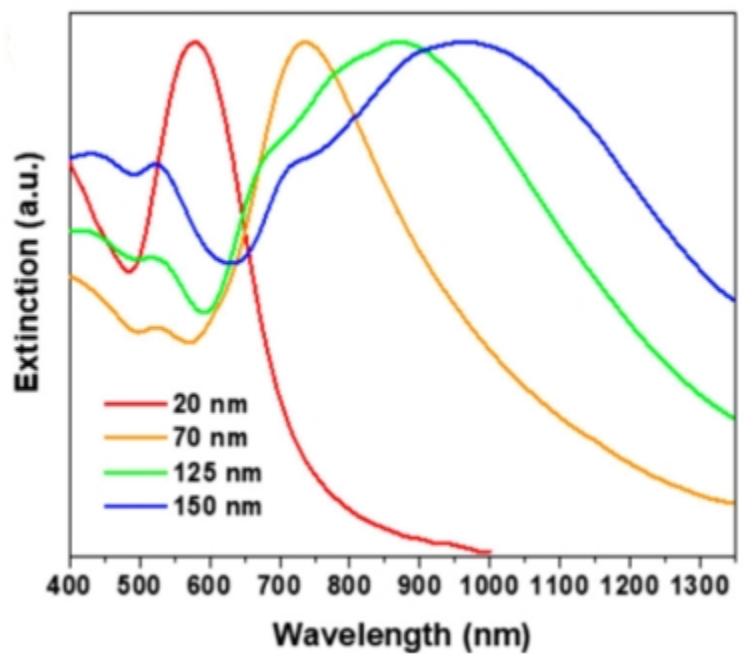

Fig 1: The UV–vis spectra of the UCR nanoshells with different core diameters.

ADVANTAGES

- Instantaneous response
- Chemical-free remote control
- Full reversibility
- Robust and flexible synthesis process
- Transparent

APPLICATION

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OTHER INFORMATION

KEYWORDS

Au shells, magnetic particles, confined growth, plasmonic resonance, scattering, transparent displays, Fe3O4@Au, anti-counterfeiting, magnetic assembly

CATEGORIZED AS

- Materials & Chemicals
  - Nanomaterials

RELATED CASES

2020-244-0

For use in a variety of electronic applications, including flexible transparent displays, optical metasurfaces, smart windows, wearable electronics, color holograms, and anti-counterfeiting devices.

PATENT STATUS

Country	Type	Number	Dated	Case
United States Of America	Published Application	20230383124	11/30/2023	2020-244

RELATED MATERIALS

- Nano Lett. 2020, 20, 11, 8242–8249 Publication Date: October 15, 2020 - 10/15/2020

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