

Nanomaterials with surface plasmon resonance property for optical applications

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This presentation focuses on functional nanomaterials with good surface plasmon resonance properties including Ag and conductive F/Sb doped SnO₂ nanoparticles synthesized via facile chemical routes. Ag nanoparticles (NPs) with the size less than 10 nm were fabricated in TiO₂-SiO₂ photosensitive composite film showing prominent SPR absorption spectra at around 350-500 nm with its peak at 410 nm. This hybrid film with strong SPR absorption of Ag NPs can be applied as diffraction optical element fabricated by holographic lithography. Ag NPs was also prepared in the composite form with SiO₂ particles to be utilized as light scattering particles in light guided plate application. Next, F/Sb co-doped SnO₂ conductive nanoparticles with the size less than 10 nm were synthesized by one-step sonochemical process. They exhibited good size distribution and SPR spectra in near infrared region. This feature makes the possibility for IR-shielding application in solar cell panel that can considerably improve the cell efficiency.

Topics

Session A. Physics of condensed matter and spectroscopy

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