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Optical properties of inorganic nanoparticle-polymer hybrid films

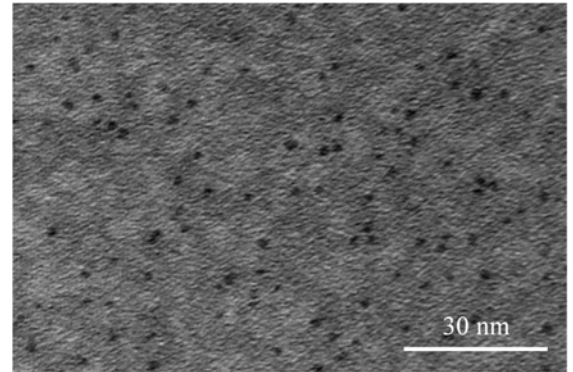
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Abstract

Inorganic-organic hybrid nanomaterials are created by nanoparticle species with different polymer matrices. Hybrid materials become popular and attractive because of their novel properties which come from the surface effects from small size nanoparticles, interfaces between nanoparticles and polymers, and morphologies of nanoparticles. The optical property of the inorganic-organic hybrid materials is provided by the transparency of most polymer matrices and the small size of the nanoparticles which is much smaller than light wavelength.

Photo-induced self-healing property is studied in metal nanoparticle-organic system (Au-PS). Heat for healing the polymer is generated by the photothermal effect of gold nanoparticles. Also, oxide nanoparticle-organic system (ZnO-PMMA) is developed for UV-shielding purpose. The ZnO-PMMA hybrid films have excellent UV absorption from ZnO nanoparticles and visible light transparency due to PMMA matrix.



TEM image of Gold nanoparticles

Biography

Lingchen Kong is currently a Master of Engineering student working with Dr. Kathy Lu. He started his graduate study from Fall 2018 and is expected to graduate in December 2019. His research work involves synthesizing nanoparticles-polymer hybrid materials, studying the particle dispersion behavior and optical properties of the nanoparticle-polymer hybrid films.

