Synthesis of Various Metal Nanoparticles and Fullerene Derivatives
Under Ultrasonic Irradiation

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The synthesis of metal nanoparticles showed with various surfactants and metal salts such as KAuCl₄, AgNO₃ in water. The products were well dispersed metal nanoparticles in water. The reaction time of synthesis of metal nanoparticles was investigated by monitoring the change of color and the change of peak of UV-vis spectra under ultrasonic irradiation. The products were characterized by UV-vis, TEM, MALDI-TOF-MS spectra. Synthesis of fullerene derivatives by the fullerenes and several oxidants, took place under ultrasonic condition. The reactivity of fullerene derivatives which was produced, will be discussed. The MALDI-TOF-MS, UV-vis Spectra used to confirm the products of fullerene derivatives. Also, the preparation of self-assembled fullerene-gold nanoparticle films and ultrasonic, chemical stability of these films will be illustrated. Primarily, UV-visible spectroscopy was used in determining the characterization of these self-assembled multi-layered nanoparticle films.

1. Metal Salts + Various Surfactants → Metal(0)

1.1. Metal Salts + Various Surfactants → Metal(0) under Ultrasonic Irradiation

2. Metal(0) + HS-CH=CH-N → Metal-S-CH=CH-N

3. Fullerene + Metal-S-CH=CH-N → Metal-S-CH=CH-N

Keywords: Fullerene[C₆₀], Metal nanoparticle, Various surfactant, UV-vis spectra, TEM