

## Poster ME-2

### Synthesis and imaging of magnetic gold nano shell (MGNS) for biomedical applications

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Metal nano-shells are a new type of nano-particles consisting of a dielectric core covered by a thin metallic shell. Metal nano-shell generated heat as it was influenced by tunable optical resonance. Magnetic gold nano-shell (MGNS) is coating a silica supporter which is embedded magnetic particles in silica (SiO<sub>2</sub>) that can apply for magnetic resonance imaging (MRI). The colloidal gold nanoparticles were attached to ligand-functionalized silica supporters. These particles grew into a gold nano-shell whose size (140 nm) had narrow size-distribution. The surface morphologies and surface properties were determined by scanning electron microscope (SEM) and Energy Dispersive X-ray Spectroscopy (EDX), respectively. Gold nano-shell exhibited a strong near infrared ray (NIR) absorption at 820 nm by adjusting the core/shell ratio. The higher concentration of metallic precursor induced the stronger intensity of near IR absorption. The MGNS are conjugated to a cancer-targeting antibody, Herceptin. Conjugation of the MGNS with Herceptin as MRI probes has been successfully demonstrated for the monitoring of *in vitro* selective targeting events of human cancer cells. Further MSGN enables *in vitro* optical detection of cancer with epi-fluorescence microscope images.

Subsequently, the MGNS are demonstrated as the possibility for MRI Contrast agents of cancer diagnosis and hyperthermia effect by NIR illumination for cancer treatment.

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