HANYANG UNIVERSITY

2019 HISS Research Project
(Synthesis of Au and Polymer Particles)

Professor:	**Eun Chul Cho**
E-mail:	enjo@hanyang.ac.kr
Department	Chemical Engineering
Website	https://sites.google.com/site/hanyangcholab/

Laboratory Research Center Information	
Topics	• Synthesis of inorganic and polymer particles • Assembly of the colloids to produce one to three dimensional structures • Cosmetic, Sensor, Energy Applications
Activities	• Synthesis of Polymer-Inorganic Particles for UV-NIR Shielding Cosmetic Ingredients • Plasmonic-based Structures for Sensor and Solar Energy Harvest
Achievement	**Selected Publication**: *Chem. Mater.* 2014, *26,* 3272; *Anal. Chem.* 2014, *86,*16675; *ACS Appl. Mater. Interf*. 2015, *7*, 20438; *Anal. Chem.* 2017, *89,*11259; *ACS Appl. Mater. Interf.* 2017, *9,* 43563; *ACS Appl. Mater. Interf.* 2017, *9,* 43583. **Corporate Project**: LG **Government Project**: NRF

Pre-requisite & Eligibility	
Academic Background	• Basic knowledge on Inorganic Chemistry • Basic knowledge on Organic and Polymer Chemistry • Nanotechnology and Material science
Relevant Experience	• Nanomaterials for optical/energy applications (recommended but not mandatory)
Language	Intermediate level of English writing and speaking

Objective & Description:	Students are supposed to understand the basic science about the inorganic and polymer chemistry through the synthesis of gold and polymer nanoparticles (emulsion polymerization). The other objective is to understand the optical properties of noble metal nanoparticles on the basis of localized surface plasmon resonance.		
Project Duration	4 weeks	Project Hours:	minimum 80 hours

Schedule:	**Weekly Topic & Activities**	**Student Assignment**

Week 1	- Orientation on the summer school program. - Paper review about the synthesis of gold nanoparticles (2-3 papers)	A report for the summary of the literatures
Week 2	- Discussion time about the review - Synthesis of gold nanoparticles - Characterization of gold nanoparticles	Report on the experimental results
Week 3	Paper review about the synthesis of polymer particles (2-3 papers)	A report for the summary of the literatures
Week 4	- Discussion time about the review - Synthesis of Polymer Particles - Characterization of Particles	Report on the experimental results

Evaluation	Attendance	Presentation Reports (literatures)	Presentation Reports (experiment)
	30%	40%	30%