



HANYANG UNIVERSITY

2019 HISS Research Project (Development of membrane materials and processes for sustainable future)

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Laboratory Research Center Information	
Topics	<ul style="list-style-type: none">- Understanding of the basics of membrane engineering; from membrane preparation to membrane applications
Activities	<ul style="list-style-type: none">- Design of membrane based applications (Fuel cell, Gas separation, Energy harvesting, Water treatment)- Preparation of membranes for the applications- Membrane characterization and performance evaluation
Achievement	<ul style="list-style-type: none">- Proposal for government-funded projects- Preparing the manuscript for publication in SCI Journal

Pre-requisite & Eligibility	
Academic Background	<ul style="list-style-type: none">- College level chemistry- College level electrochemistry- Basic knowledge of polymer property- English writing skills
Relevant Experience	<ul style="list-style-type: none">- Dealing with the chemicals
Language	<ul style="list-style-type: none">- Communication in English

Objective & Description:	Depending on the membrane applications, requirements of membranes and subsequent process condition varies, therefore the student is asked to understand the process then design the membrane-based applications. Performance evaluation is performed after designing the process. If problem or failure occur, an alternative solution to the problem should be provided.		
Project Duration	6 weeks	Project Hours:	Minimum 80 hours

Hanyang International Summer School

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	Weekly Topic & Activities	Student Assignment
Schedule:	Week 1 <ul style="list-style-type: none"> - Introduction - Research survey regarding development of membrane materials and processes for sustainable future - Understanding of membrane process and characteristics 	A written report of basic principle of membrane and membrane process Choose one topic for the membrane applications
	Week 2 <ul style="list-style-type: none"> - Survey of current research trends of selected membrane applications - Determining a suitable membrane design (morphology, configuration) for membrane applications 	A research trend in membrane applications
	Week 3 <ul style="list-style-type: none"> - Membrane preparation (Solvent evaporation, thermal precipitation, solvent precipitation, and electro-spinning) - Membrane characterization for the prepared membranes 	A short report of membrane preparation process
	Week 4 <ul style="list-style-type: none"> - Membrane process design suitable for membrane applications - Understanding effect of the membrane and parameters in membrane applications 	A short report of key factors in selected membrane applications
	Week 5 <ul style="list-style-type: none"> - Membrane performance evaluation and trouble- shooting steps 	A short report of the causality of the results
	Week 6 <ul style="list-style-type: none"> - Preparation for final presentation 	10 pages of written final report 15-20min of oral presentation

	Attendance	Weekly Report	Final Presentation or Paper
Evaluation	30%	40%	30%