



HANYANG UNIVERSITY

2019 HISS Research Project (PEM Fuel Cell, Electrocatalytic water splitting and Li-ion Battery)

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Laboratory Research Center Information	
Topics	<ul style="list-style-type: none">Nanomaterials for energy generationPEM Fuel Cell
Activities	<ul style="list-style-type: none">Synthesis of nanomaterials for hydrogen and oxygen evolution reactionHot & Humid Electro Spray Deposition (HHED) onto the polymeric membraneThree-dimensional reconstruction of electrodes for PEM Fuel Cell/ Li Battery
Achievement	<ul style="list-style-type: none">Selected Publication: Advanced Energy Materials - 2018 (Theme: E-waste recycling) Small - 2018 (Theme: Hydrogen generation)Corporate Project: Samsung SDI, POSCO-RIST, Hyundai MobisGovernment Project: Korea Institute of Energy Technology Evaluation and Planning

Pre-requisite & Eligibility	
Academic Background	<ul style="list-style-type: none">Basic knowledge on electrochemistryMaterial science and Energy EngineeringNanotechnology
Relevant Experience	Nanomaterials for energy applications (recommended but not mandatory)
Language	Intermediate level of English writing and speaking

Objective & Description:	The program's intent is to educate students about the renewable clean energy systems and provide them a better understanding of the most advanced technology for energy harvesting. The students will be given hands on training for synthesis of nanomaterials for energy applications. Students will be exposed to the scientific inquiry of conducting experiments, data recording and how to analyze results.		
Project Duration	4 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"> • A mandatory orientation on the summer school program • Lecture on alternate fuels and clean energy systems 	Submission of report on renewable energy sources
	Week 2 <ul style="list-style-type: none"> • Introduction to fuel systems • Lecture on current developments in fuel cell • Practical modelling of a fuel cell and demonstrating it working • Equipment handling, function and safety education on fuel cell 	Report on fuel cells types and their functionality
	Week 3 <p>Energy conversion: Training sessions by skilled post-graduate research students and doctoral program students from our lab to teach new concepts, lead discussions, guide research, help run experiments, and provide technical demonstrations.</p>	Simple nanomaterial synthesis
	Week 4 <ul style="list-style-type: none"> • Lecture on hydrogen energy and harvesting procedures • Technical demonstration of hydrogen production from water. • Preparation for final presentation 	10 pages written final report 15 min. oral presentation + 5 min. Q&A

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