Advanced Chemistry of Materials

Credits: 3

Classroom: B105, Institute of Chemistry, Academia Sinica

Class hour: Every Tuesday, 1:30 a.m. –4:30 p.m.

Week	Date	Topics	Lecturers
1	2/18	Atomically Precise Metallic Nanostructures	Chun-Hong Kuo
2	2/25	Atomically Precise Metallic Nanostructures	Chun-Hong Kuo
3	3/4	Fabrications and Applications of Bioceramics	Wing Kiu Yeung, NTUT
4	3/11	Organic Electronic Materials	Hsiao-hua Yu
5	3/18	Organic Electronic Materials	Hsiao-hua Yu
6	3/25	Stimuli-responsive Materials	Shih-Sheng Sun
7	4/1	Stimuli-responsive Materials	Shih-Sheng Sun
8	4/8	Midterm Exam	
9	4/15	Polymer Chemistry	Hung-Ju Yen
10	4/22	Polymer Chemistry	Hung-Ju Yen
11	4/29	Surface Characterization for Solid Catalyst	Cedric Po-Wen Chung
12	5/6	Surface Characterization for Solid Catalyst	Cedric Po-Wen Chung
13	5/13	Materials of Organic Solar Cells	Chin-Ti Chen
14	5/20	Materials of Organic Solar Cells	Chin-Ti Chen
15	5/27	Materials of Organic Solar Cells	Chin-Ti Chen
16	6/3	Final Exam	

Course Syllabus

(1) Atomically Precise Metallic Nanostructures (**Chun-Hong Kuo**)
Morphosynthesis & Analysis
Catalytic Energy Conversion

(2) Organic Electronic Materials (**Hsiao-hua Yu**)
Molecular and Nanostructural Designs
Interfacing Organic Materials with Biology

(3) Stimuli-responsive materials (**Shih-Sheng Sun**)
Intermolecular interactions and molecular recognition
Stimuli-responsive soft materials
Stimuli-responsive luminescent materials

(4) Polymer Chemistry (**Hung-Ju Yen**)
Basic concept of polymers and review their synthetic approaches.
Material sources and polymerizations for conventional and engineering polymers.
Synthesis and applications of high-performance polymers.

(5) Surface Characterization for Solid Catalyst (**Cedric Po-Wen Chung**)
Physical/Chemical Surface Characterization for Solid Catalyst
In-situ FT_IR Application for Solid Catalyst

(6) Materials of Organic Solar Cells (**Chin-Ti Chen**)
Inorganic semiconducting materials for solar cells
Organic photovoltaic (OPV)– Part 1 Organic small molecular materials
Organic photovoltaic (OPV) – Part 2 Polymer materials
Materials for dye sensitized solar cell (DSSC)
Materials for perovskite solar cell (PVSC)