

2023 Fall Semester 永續奈米化學特論

Special Topics in Sustainable Nanochemistry course syllabus

Course name: (Chinese) 永續奈米化學特論 (English) Special Topics in Sustainable Nanochemistry	Dept. of course offering: Course code: Class Time/Room:	永續化學博 SCSC30027 T567-			
Lecturers: 郭俊宏					
credit:	3.00	type:	選修	grade:	*
Prerequisite: 普通化學和無機化學 Passes in general chemistry and inorganic chemistry will be required in prior to taking this course.					
Course descriptions and objectives: 星期二下午 13:20~16:20 化學所 B105 在本課程中，將基於無機化學和物理化學的觀點對永續奈米化學進行介紹和討論。除了快速回顧基本技能外，並將介紹一些獨特的技術如同步輻射。建議想要參加這門課程的學生具備普通化學和晶體學的基礎知識。課程為 3 學分，一學期約 15 週或 45 小時，包括一次期中考和一次期末考。 In this course, introductions and discussions about sustainable nanochemistry will be performed based on the viewpoints of inorganic and physical chemistry. Apart from a quick review of basic skills, some unique technologies like synchrotron radiation will be introduced instead by beamline experts. Students who want to take this course are strongly suggested to have basic knowledge of general chemistry, and crystallography. The class should be counted 3 credits and will take a semester, about 15 weeks or 45 hours including one midterm and one final. 透過本課程，希望建立學生在奈米科學上的基礎知識，並引導其在奈米科學應用端的思考，最終促進同學跨領域研究的興趣。 This course aims to help students build up fundamental knowledge of nanoscience, leading them to thinking about applications of nanoscience, and eventually inspiring their interests in interdisciplinary research. 永續化學、奈米化學 Sustainable Nanochemistry					

- A.具化學、物理、數學、生物等基礎知識
- B.具有化學工程與化學核心知識
- C.能將理論知識與實務操作結合來解決工程問題
- D.能應用化學與化學工程核心知識來推動永續的發展
- E.具發掘、分析、探討、解決問題的能力(研究所特別強調)
- F.能獨立思辨、並能整合跨領域學理知識(研究所特別強調)
- G.具良好表達能力、並能有效溝通
- H.具願景與國際觀、並重視團隊合作
- I.認知社會責任、重視專業倫理
- J.具備人文素養、終身學習成長

Textbooks: (Please indicate the book' s name, author, publisher and the publication date):	<p>Handouts and research literatures will be used.</p> <p>Referred Textbooks:</p> <p>“Sustainability Science and Technology: An Introduction” by Alejandro De Las Heras, CRC</p> <p>“Nanoscale Materials in Chemistry” 2nd edition by Kenneth J. Klabunde and Ryan M. Richards, Wiley, 2009</p> <p>“Nanoscale Science and Technology” by Robert W. Kelsall, Ian W. Hamley and Mark Geoghegan, Wiley, 2005.</p> <p>“Electronic Properties of Materials” 4th edition by Rolf E. Hummel, Springer, 2011.</p>
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Course Contents		Hours				memo
Topics	Outlines	lectures	Demonstration	Practice	Others	

Description of Course Details:

1.Homework and Assignments, Exams and Quizzes, Evaluation and Grading Policy:

2.Pedagogy and other supplementary information (websites, TAs, handouts and/or databases):

課程網址 Website: <https://tigp-scst.chem.sinica.edu.tw/index.php/en/course/courses>

Office hours	Time slot	Location	Contact information
Syllabus			
Week	Date	Course Progress, Contents, Topics	Lecturers
1	2023-09-12(二)	Introduction to Class Contents Basic Chemistry: Atom, Molecule, and Ion	Dr. Chun-Hong Kuo
2	2023-09-19(二)	Introduction to Nanotechnology	Dr. Chun-Hong Kuo
3	2023-09-26(二)	Electron Microscope: Introduction to Structure	Dr. Chun-Hong Kuo
4	2023-10-03(二)	Electron Microscope: Introduction to Principle	Dr. Chun-Hong Kuo
5	2023-10-10(二)	Holiday	Dr. Chun-Hong Kuo
6	2023-10-17(二)	Carbon Nanomaterials for Sustainable Technology	Dr. Chun-Hong Kuo
7	2023-10-24(二)	Midterm Exam	Dr. Chun-Hong Kuo
8	2023-10-31(二)	Special Topic in Cuprous Oxide	Dr. Chun-Hong Kuo
9	2023-11-07(二)	Bioceramics	Dr. Wing Kiu Yeung, NTUT
10	2023-11-14(二)	Metallic Nanocrystals I	Dr. Chun-Hong Kuo
11	2023-11-21(二)	Metallic Nanocrystals II	Dr. Chun-Hong Kuo
12	2023-11-28(二)	Nanoarchitectonic Engineering and Temporal Probing Spectroscopy	Dr. Chi Chen, RCAS
13	2023-12-05(二)	Raman Spectroscopy	Dr. Chun-Hong Kuo
14	2023-12-12(二)	Green Nano vs Life	Dr. Chun-Hong Kuo
15	2023-12-19(二)	Introduction to Novel Nanotechnology I (Student Presentation)	Dr. Chun-Hong Kuo
16	2023-12-26(二)	Introduction to Novel Nanotechnology II (Student Presentation)	Dr. Chun-Hong Kuo
17	2024-01-02(二)	Panel Discussion	Dr. Chun-Hong Kuo
18	2024-01-09(二)	Panel Discussion	Dr. Chun-Hong Kuo

memo:

- 1.To protect intellectual property right, please do not illegally photocopy textbooks.
- 2.The others column of course details includes outside campus visit and seminar.

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