2025 Spring Special Topics in Heterogeneous Catalysis

課程名稱： （中文）非均相催化特論 （英文）Special Topics in Heterogeneous Catalysis				開課單位： 永久課號： 上課時間/教室：	永續化學博 SCSC30040 R567-
授課教師： 郭俊宏					
學分數：	3.00	必 / 選修：	選修	開課年級：	*
先修科目或先備能力： None					
課程概述與目標： In this course, students will learn (1) what is so-called heterogeneous catalyst, (2) the fundamentals of heterogeneous catalysis, (3) general catalyst characterizations (4) advanced synchrotron techniques for heterogeneous catalysis, and (5) the corresponding operation and data analyses. This is a 3-credit class. There will be 48 hours for 16 weeks, including one midterm, six experimental operations, and six result presentations. We expect that, after the course, students will be independent in the designs of catalyst structures for specific catalytic reactions, and able to pick suitable techniques for analyzing and interpreting the experimental observations correctly.					
教科書（請註明書名、作者、出版社、出版年等資訊）：	1. G. C. BOND, “Heterogeneous Catalysis: Principle and Applications”, 2nd Ed., Clarendon Press·Oxford, 1990. 2. J. M. Thomas and W. J. Thomas, “Principles and Practice of Heterogeneous Catalysis”, VCH, 1996 Handouts and research literatures will be used. Referred Textbooks: “Heterogeneous Catalysis: Principle and Applications” 2nd Ed by G. C. Bond, Clarendon Press·Oxford, 1990. “Principles and Practice of Heterogeneous Catalysis” VCH, 1996.				

課程大綱		分配時數				備註
單元主題	內容綱要	講授	示範	習作	其他	
教學要點概述：						

1.學期作業、考試、評量：

中文：期中考 40%, 期末考 50%, 出席 10% (期考中為筆試, 期末考為數據分析測驗)

英文：Midterm 40%, Final 50%, Attendance 10% (The midterm will be written examination & the final will be datum analyses texamination)

2.教學方法及教學相關配合事項（如助教、網站或圖書及資料庫等）

https://tigp-scst.chem.sinica.edu.tw/index.php/en/course/courses

如課程授課週數為 16 或 17 週，請填寫「彈性教學」之中、英文說明

(中文) 將額外安排實機操作時間, 無法參與的同學請勿修習此課程

(英文) The extra weeks will be used for making up the experimental operations. Students who won't be available for the experimental operation are suggested not to take the course.

師生晤談	排定時間	地點	聯絡方式
	by request		

每週進度表

週次	上課日期	課程進度、內容、主題	教師授課時數
1	2025-02-20(四)	Interpretations for the Class and Examination criteria	Dr. Chun-Hong Kuo
2	2025-02-27(四)	Funda,mental Principle of Heterogeneous Catalysis	Dr. Chun-Hong Kuo
3	2025-03-06(四)	Surface Structure and Property	Dr. Chun-Hong Kuo
4	2025-03-13(四)	Surface Adsorption	Dr. Chun-Hong Kuo
5	2025-03-20(四)	Types and Designs of Heterogeneous Catalysts	Dr. Chun-Hong Kuo
6	2025-03-27(四)	Heterogenous Catalysis-The Example for Energy Conversion	Dr. Wei-Hsiang Huang
7	2025-04-03(四)	Holiday	
8	2025-04-10(四)	Midterm	Dr. Chun-Hong Kuo
9	2025-04-17(四)	Lecture: Introduction to Synchrotron X-Ray Absorption Spectroscopy (XAS)	Dr. Chih-Wen Pao
10	2025-04-24(四)	4/22(TUE) XAS Operation at NSRRC 4/24(THU) Result Presentation (Group 1)	Dr. Chih-Wen Pao
11	2025-05-01(四)	4/29 (TUE) XAS Operation at NSRRC 5/01 (THU) Result Presentation (Group 2)	Dr. Chih-Wen Pao

12	2025-05-08(四)	5/06 (TUE) XAS Operation at NSRRC 5/08 (THU) Result Presentation (Group 3)	Dr. Chih-Wen Pao
13	2025-05-15(四)	5/13 XAS Operation at NSRRC 5/15 Result Presentation (Group 4)	Dr. Chih-Wen Pao
14	2025-05-22(四)	5/20 (TUE) XAS Operation at NSRRC 5/22 (THU) Result Presentation (Group 5)	Dr. Chih-Wen Pao
15	2025-05-29(四)	5/27 (TUE) XAS Operation at NSRRC 5/29 (THU) Result Presentation (Group 6)	Dr. Chih-Wen Pao
16	2025-06-05(四)	6/05 (THU) Final: Datum Analysis Examination & amp; Result Presentation	Dr. Chih-Wen Pao