109 學年度 第 1 學期 結晶科學發展與應用 Advances in Crystal Science and Engineering 課程綱要

課程名稱： （中文）結晶科學發展與應用 （英文）Advances in Crystal Science and Engineering				開課單位：	分子碩
				永久課號：	IMO5138
授課教師： 杉山輝樹					
學分數：	3.00	必 / 選修：	選修	開課年級：	*
先修科目或先備能力： The course is designed for students who have knowledge of introductory level of physical and organic chemistry.					
課程概述與目標： The aim is to provide an overview of the current practical and theoretical knowledge for crystal nucleation and growth from solutions and practical use. Recent research streams of organic solid-state photochemistry aiming asymmetric organic synthesis, and nucleation and crystal growth of amino acids and proteins using lasers are also introduced. The fundamental knowledge of organic chemistry, thermodynamics, and photochemistry should be necessary to understand this lecture.					
教科書（請註明書名、作者、出版社、出版年等資訊）：	Industrial Crystallization: Fundamentals and Applications, Alison Lewis, Cambridge University Press (2015) Crystallization: Basic Concepts and Industrial Applications, Wiley-VCH (2013)				

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

Attendance (20%), Homework (35%), Term-end exam (45%)

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）

Handout

師生晤談	排定時間	地點	聯絡方式

	Monday 1:20 – 4:20 pm	TKP Building 612	sugiyama@g2.nctu.edu.tw

每週進度表

週次	上課日期	課程進度、內容、主題
1		Introduction to crystal science
2		Fundamentals of crystal nucleation and growth 1
3		Fundamentals of crystal nucleation and growth 2
4		Fundamentals of crystal nucleation and growth 3
5		Solvent influence on crystallization
5		Review 1
7		Precipitation processes 1
8		Precipitation processes 2
9		Control of crystallization processes 1
10		Control of crystallization processes 2
11		Control of crystallization processes 3
12		Review 2
13		Crystallization in pharmaceutical and bioprocessing industries
14		Protein crystallization
15		Solid-state photosynthesis toward chiral control
16		Laser-induced crystal nucleation and growth 1
17		Laser-induced crystal nucleation and growth 2
18		Final Exam

備註：

1.請遵守智慧財產權觀念及勿使用不法影印教科書。

2.其他欄包含參訪、專題演講等活動。