

104 學年第 2 學期 雷射生物奈米科學 Laser Bio/Nano Science 課程綱要

課程名稱：(中文) 雷射生物奈米科學		開課單位	應化碩			
(英文) Laser Bio/Nano Science		永久課號	IAC6619			
授課教師：增原宏						
學分數	3	必/選修	選修	開課年級	*	
先修科目或先備能力：						
Physical, Quantum, Organic, and/or Polymer Chemistry						
課程概述與目標：						
Starting from fundamental spectroscopy and nonlinear photochemistry, recent developments of spectroscopic and imaging methods utilizing lasers and optical microscopes are presented and their high potential is demonstrated. Laser-induced dynamics of polymer films, molecular crystals, nanoparticles, and living cells are presented and discussed. One possible picture of Laser Bio/Nano Science will be given.						
教科書 (請註明書名、作者、出版社、出版年等資訊)	Masuhara et al., "Microchemistry : Spectroscopy and Chemistry in Small domains" , North-Holland, 1994 Masuhara, Kawata, and Tokunaga Ed., "Nano Biophotonics" ,Elsevier, 2007					
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 Homework: Sometimes Exam: "Questions and Answers" are given at the beginning of each classroom Grading method: How students join "Questions and Answers" and Examinations						
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) Using PPT and distributing their copies						
師生晤談	排定時間	地點			連絡方式	
	By appointment	Tin-Ka-Ping Photonics Center- Room 613			by e-mail	
每週進度表						
週次	上課日期	課程進度、內容、主題				
1	2016/2/16	Introduction				
2	2016/2/23	Spectroscopy and nonlinear photochemistry				

3	2016/3/1	Laser ablation dynamics and mechanism of molecular solids
4	2016/3/8	Laser fabrication of nanoparticles in solution
5	2016/3/15	Microscopy and micro-spectroscopy
6	2016/3/22	Single nanoparticle fluorescence spectroscopy
7	2016/3/29	Single nanoparticle light scattering spectroscopy
8	2016/4/5	Holiday
9	2016/4/12	Laser trapping chemistry of micro-particles
10	2016/4/19	Laser trapping chemistry of nanoparticles
11	2016/4/26	Laser trapping-induced phase separation
12	2016/5/3	Laser trapping dynamics and spectroscopy
13	2016/5/10	Mid-term examination
14	2016/5/17	Plasmon-enhanced photochemistry
15	2016/5/24	Photoelectron emission microscopy of nanostructures
16	2016/5/31	Femtosecond laser crystallization of proteins
17	2016/6/7	Femtosecond laser manipulation of living cells
18	2016/6/14	Term-end Examination

※ 請同學遵守智慧財產權觀念及勿使用不法影印教科書。

備註：

1. 其他欄包含參訪、專題演講等活動。
2. 請同學遵守智慧財產權觀念及勿使用不法影印教科書。

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