

课程详述

COURSE SPECIFICATION

以下课程信息可能根据实际授课需要或在课程检讨之后产生变动。如对课程有任何疑问，请联系授课教师。

The course information as follows may be subject to change, either during the session because of unforeseen circumstances, or following review of the course at the end of the session. Queries about the course should be directed to the course instructor.

1.	课程名称 Course Title	X-射线单晶结构解析 Single Crystal X-ray Structure Analysis				
2.	授课院系 Originating Department	化学系 Department of Chemistry				
3.	课程编号 Course Code	CH318-14				
4.	课程学分 Credit Value	2				
5.	课程类别 Course Type	专业选修课 Major Elective Courses				
6.	授课学期 Semester	春季 Spring				
7.	授课语言 Teaching Language	中英双语 English & Chinese				
8.	授课教师、所属学系、联系方式 (如属团队授课, 请列明其他授课教师) Instructor(s), Affiliation & Contact (For team teaching, please list all instructors)	张元竹, 副教授, 化学系 Yuanzhu Zhang, Associate Professor, Department of Chemistry				
9.	实验员/助教、所属学系、联系方式 Tutor/TA(s), Contact	无 NA				
10.	选课人数限额(可不填) Maximum Enrolment (Optional)					
11.	授课方式 Delivery Method	讲授 Lectures	习题/辅导/讨论 Tutorials	实验/实习 Lab/Practical	其它(请具体注明) Other (Please specify)	总学时 Total
	学时数 Credit Hours	24	4	4		32

12. 先修课程、其它学习要求 Pre-requisites or Other Academic Requirements	化学原理 A (CH101A)
13. 后续课程、其它学习规划 Courses for which this course is a pre-requisite	
14. 其它要求修读本课程的学系 Cross-listing Dept.	

教学大纲及教学日历 SYLLABUS

15. 教学目标 **Course Objectives**

了解单晶 X-射线晶体结构分析的原理和方法，掌握晶体结构分析程序的使用。

To understand the theory and method of single x-ray structural analysis,

Learn how to collect and solve the structures for some simple molecules.

16. 预达学习成果 **Learning Outcomes**

对单晶衍射的原理有较深的理解，对单晶衍射技术有初步的接触和了解，能够解析对称性较低的简单化合物的晶体结构，学会使用一些晶体绘图软件绘图，明白晶体数据的物理含义，熟悉科技论文写作中关于晶体数据的格式和要求。

Understand the nature of the diffraction theory in general and the diffractions by crystals;

Look briefly at the single crystal x-ray diffraction technique, including understand the many types of information that can be obtained by modern crystal structure analysis;

Learn how to solve the structures of some simple molecules;

Learn how to draw the figures via XP, X-Seed, Diamond, CrystalMaker, etc. software;

Understand the physical meaning of the structural parameters;

Be proficient with the nature and format of a structural data necessary for a literature paper.

17. 课程内容及教学日历（如授课语言以英文为主，则课程内容介绍可以用英文；如团队教学或模块教学，教学日历须注明主讲人）

Course Contents (in Parts/Chapters/Sections/Weeks. Please notify name of instructor for course section(s), if this is a team teaching or module course.)



- (1) The introduction of the x-ray diffraction techniques. 单晶衍射技术前沿介绍 (4 credit hours).
- (2) The theory of diffraction and the symmetry in crystal. 衍射理论及晶体对称性 (6 credit hours).
- (3) Diffraction technique (data collection, reduction, and solving). 晶体衍射理论与实践(12 credit hours)
- (4) Software learning and practice, including XP, Diamond, etc. 软件讲解及学习(6 credit hours)
- (5) 4-hour hand-on experience of x-ray single crystal diffractometer. 上机操作(4 credit hours)

18. 教材及其它参考资料 Textbook and Supplementary Readings

Structure of Materials - An Introduction to Crystallography, Diffraction and Symmetry Cambridge, 2007

Advanced Structural Inorganic Chemistry IUCr, 2008

Fundamentals of Powder Diffraction and Structural Characterization of Materials 2nd Edition, Springer, 2009

单晶结构分析原理与实践 第二版, 科学出版社, 陈小明, 2007

课程评估 ASSESSMENT

19. 评估形式 Type of Assessment	评估时间 Time	占考试总成绩百分比 % of final score	违纪处罚 Penalty	备注 Notes
出勤 Attendance		5		
课堂表现 Class Performance		10		
小测验 Quiz		20		
课程项目 Projects		0		
平时作业 Assignments		20		
期中考试 Mid-Term Test		0		
期末考试 Final Exam		0		
期末报告 Final Presentation		35		

其它（可根据需要
改写以上评估方
式）
**Others (The
above may be
modified as
necessary)**

	10		
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20. 记分方式 **GRADING SYSTEM**

- A. 十三级等级制 **Letter Grading**
 B. 二级记分制（通过/不通过） **Pass/Fail Grading**

课程审批 **REVIEW AND APPROVAL**

21. 本课程设置已经过以下责任人/委员会审议通过
This Course has been approved by the following person or committee of authority

化学系教学指导委员会
 Teaching committee of the chemistry department