

## 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 <b>Course Title</b>	化学前沿讲座 <b>Frontiers of Chemical Science (Summer)</b>				
2.	授课院系 <b>Originating Department</b>	化学系 Department of Chemistry				
3.	课程编号 <b>Course Code</b>	CHEMS001				
4.	课程学分 <b>Credit Value</b>	1				
5.	课程类别 <b>Course Type</b>	专业选修课 Major Elective Courses				
6.	授课学期 <b>Semester</b>	夏季 Summer				
7.	授课语言 <b>Teaching Language</b>	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) <b>Instructor(s), Affiliation &amp; Contact</b> (For team teaching, please list all instructors)	刘科, 院士, 化学系, 13811152706 Prof. Liu Ke, Department of Chemistry, 13811152706				
9.	实验员/助教、所属学系、联系方式 <b>Tutor/TA(s), Contact</b>	无 NA				
10.	选课人数限额(可不填) <b>Maximum Enrolment (Optional)</b>					
11.	授课方式 <b>Delivery Method</b>	讲授 <b>Lectures</b>	习题/辅导/讨论 <b>Tutorials</b>	实验/实习 <b>Lab/Practical</b>	其它(请具体注明) <b>Other (Please specify)</b>	总学时 <b>Total</b>
	学时数 <b>Credit Hours</b>	16				16

12. 先修课程、其它学习要求 <b>Pre-requisites or Other Academic Requirements</b>	无 NA
13. 后续课程、其它学习规划 <b>Courses for which this course is a pre-requisite</b>	无 NA
14. 其它要求修读本课程的学系 <b>Cross-listing Dept.</b>	无 NA

### 教学大纲及教学日历 SYLLABUS

15. **教学目标 Course Objectives**

本课程培养学生对化学研究的兴趣，了解化学研究的前沿进展。

To enable the students to grasp the progresses and frontiers of current chemical research, and to develop their interest in chemical research.

16. **预达学习成果 Learning Outcomes**

本课程培养学生对化学研究的兴趣，了解化学研究的前沿进展。

To enable the students to grasp the progresses and frontiers of current chemical research, and to develop their interest in chemical research.

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.)**

Section 1: Development of combustion technology of diesel engine/ 柴油机燃烧技术的发展趋势（4 课时）

The working principle and advantages of diesel engine, as well as the mechanism of combustion and pollution control are shown in this chapter. And a new way to reduce the emission of NOX and PM of diesel engine is provided at the same time.

本节主要介绍柴油机的工作原理和优势，以及燃烧和污染控制的机理，提供同时降低柴油机 NOX 和 PM 排放的新途径。

Section 2: The idea of fluid enhanced flotation of minerals (coal)/ 流体强化矿物（煤）的浮选分离的思想（4 课时）

This section includes the research on enhancing the separation of minerals at home and abroad, and the separation equipment, surface modification of particles, and new flotation agents are introduced.

本节介绍了国内外对于强化矿物颗粒分离的研究，介绍了分选设备，对颗粒进行表面改性处理，以及新型浮选药剂。

Section 3: High efficient liberation of mineral particles and development of grinding equipment/ 矿物颗粒高效解离及研磨设备的发展介绍（4 课时）

The classification of ultrafine crushing equipment, the definition of liberation and the research methods at present are introduced in this chapter. Finally, the equipment of Mineral Liberation Analyser (MLA) is introduced as well.

本节介绍了超细粉碎设备的分类，解离度的定义和现阶段研究矿物解离度的方法，最后介绍了 Mineral Liberation Analyser (MLA) 解离度分析设备。

Section 4: Introduction to CWS(coal and water slurry) technology/ 水煤浆技术简介（4 课时）

The CWS technology of fine coal and the rheological properties of slurry are introduced in this chapter as well as how to

prepare high quality CSW by improving the quality of low rank coal.

本节介绍了微细颗粒的水煤浆制备技术及浆体的流变特性，介绍了如何利用低质煤微细粒提质来制备高品质水煤浆。

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

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		40		
课堂表现 Class Performance				
小测验 Quiz				
课程项目 Projects				
平时作业 Assignments				
期中考试 Mid-Term Test				
期末考试 Final Exam				
期末报告 Final Presentation				

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

	60		报告 Report
--	----	--	--------------

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