

课程大纲

COURSE SYLLABUS

1.	课程代码/名称 Course Code/Title	CHE 5040 高等有机化学 B Advanced Organic Materials B								
2.	课程性质 Compulsory/Elective	专业核心课								
3.	课程学分/学时 Course Credit/Hours	3/48								
4.	授课语言 Teaching Language	英文 English								
5.	授课教师 Instructor(s)	王湘麟 讲席教授								
6.	是否面向本科生开放 Open to undergraduates or not	否								
7.	先修要求 Pre-requisites	Organic chemistry, physical chemistry. Polymer chemistry is preferred, but not mandatory								
8.	教学目标 Course Objectives	<p>This class introduces graduate students to the broad field of current organic, polymer and biological materials and their applications. It is designed for students who have a basic background in organic/polymer chemistry, physics, biochemistry as well as materials science. The nature of this subject is such that the course must integrate organic chemistry, biology, and materials science. The purpose for students is to master unique physical and chemical properties of organic, polymeric (versus inorganic materials), and biological materials and their uses, to understand the relationship between materials' structure and physical properties, and to employ various characterization techniques to determine materials structure and order at various length scale. Finally, the course also introduces applications of organic and biological materials in chem- and biological sensors, optical and electronic devices. The materials will show how that they realize the state-of-the-art performance in opto-electrical devices and impart their biocompatibility and bioactivity. After finishing the study of this class, the students are expected to be familiar with the frontier research topics in organic and biological materials and can read the literature with critical thinking.</p>								
9.	教学方法 Teaching Methods	<p>The class is designed for students to master the fundamental knowledge in organic and biological materials. At mean time, it is tightly combined with frontier research topics in the field, and more importantly, a significant portion of the class will be devoted to the field of faculty research in the department of MSE at SUSTC, such as organic opto-electrical materials and their application in organic electronic device, as well as the application of biological materials in biomedical. The student is required to be familiar with organic electronics and biomedical. Except to the theoretical study, the students will be highly encouraged to participate in frontier research. The current research facility at MSE provides the students excellent platform to carry out such research.</p>								
10.	教学内容 Course Contents	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 30%;">Section 1</td> <td>有机与生物材料总论</td> </tr> <tr> <td>Section 2</td> <td>有机与高分子材料的化学合成</td> </tr> <tr> <td>Section 3</td> <td>有机与高分子材料的化学合成</td> </tr> <tr> <td>Section 4</td> <td>导电高分子材料</td> </tr> </table>	Section 1	有机与生物材料总论	Section 2	有机与高分子材料的化学合成	Section 3	有机与高分子材料的化学合成	Section 4	导电高分子材料
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	Section 5	导电高分子材料
	Section 6	有机半导体材料
	Section 7	有机半导体材料
	Section 8	有机半导体材料
	Section 9	有机纳米材料
	Section 10	有机纳米材料
	Section 11	生物材料
	Section 12	生物材料
	Section 13	化学和生物传感器
	Section 14	化学和生物传感器
	Section 15	论文讨论
	Section 16	论文讨论
11.	课程考核 Course Assessment	
	课堂表现: 20% 期中考试: 20% 期末考试: 30% 论文与答辩: 20% Class Performance: 20% Midterm: 20% Final exam: 30% Final report and presentation: 20%	
12.	教材及其它参考资料 Textbook and Supplementary Readings	
	1. Principles of Polymerization, Fourth ed., Odian, G. 2. Organic Electronics Materials, Manufacturing and Applications, Edited by Hagen Klauk Wiley-VCH, ISBN-13978-3-527-31264-1 3. Organic Light-Emitting Devices: Synthesis, Properties, and Application, Wiley-VCH, 2006 4. 《功能高分子材料》，赵文元主编，化学工业出版社，2011年 5. 《生物材料概论》，冯庆玲，清华大学出版社，2009	