

5. 物質・生命化学系 Materials Science and Biotechnology Field			MSB-S1
授業科目名 Course Title	Polymer Science 高分子科学	単位数 Credit	2
担当教員 Instructor	MAEDA Yasushi, SUGIHARA Shinji, SAKAGUCHI Toshikazu, MATSUMOTO Atsushi 前田 寧, 杉原 伸治, 阪口 壽一, 松本 篤	開講学期 Semester	春学期 Spring
キーワード Keywords	高分子科学, 精密重合, 赤外分光法, ラマン分光法, 粘弾性 Polymer science, Precision polymerization, IR spectroscopy, Raman spectroscopy, Viscoelasticity	曜日/時限 Day & Time	木曜日/3 時限 Thursday/3 rd class

授業概要 Course summary	<p>高分子合成・物性・構造の基礎知識を学び, 高分子科学に関する知識を深める。特に, 汎用高分子や機能性高分子の合成を阪口が担当し, 高分子の精密合成と構造を杉原が担当し, 赤外・ラマン分光法による生体・合成高分子の解析を前田が担当し, 高分子の構造と物性について松本が担当する。</p> <p>The purpose of this class is to deepen understanding of the polymer science including polymer synthesis, polymer characteristics, and polymer structures. In particular, this class provides the knowledge in synthesis of commodity and functional polymers (T. Sakaguchi), precision polymerization and their product structures (S. Sugihara), the spectroscopic analysis of biological and synthetic polymers by means of IR and Raman spectroscopy (Y. Maeda), and the relationship between structure and physical properties of polymers (A. Matsumoto).</p>
到達目標 Course goal	<p>高分子合成と反応, 精密重合法, 赤外・ラマン分光法, および高分子の構造と物性の関係についての理解</p> <p>To comprehend the polymer synthesis and reaction, precision polymerization, both IR and Raman spectroscopy analyses, and the relationship between the structure and physical properties of polymers.</p>
授業内容 Course description	<ol style="list-style-type: none"> 1. Polymer synthesis and reaction: coordination polymerization, polycondensation, and polyaddition. 2. Introduction of various precision polymerizations: cationic, anionic, and radical polymerization. 3. Comparison of IR and Raman spectroscopy: principle, method, and application. 4. Introduction of polymer physics.
準備学習 (予習・復習) 等 Preparation / Review	<p>In advance, carry out a review of the basic polymer chemistry. We require all the review what you learned at the class. (We sometimes assign an examination or paper on the course).</p>
授業形式 Class style	<p>講義と演習</p> <p>Lectures and exercises</p>
成績評価の方法・基準 Method of evaluation	<p>小テストおよび演習レポート</p> <p>Examination (short test) and exercise reports</p>
教科書・参考書等 Textbook and material	

関連資料を配布する。 Prints are supplied as necessary.
受講要件・予備知識 Prerequisite
初歩的な化学の基礎知識が必要。 We require knowledge of the basic chemistry.
その他の注意事項 Note
授業形態：対面 Class: In-person instruction