科目ナンバリング	U-LAS13 10039 LE60				
授業科目名<英訳>	Introduction to the Chemistry of Materials-E2 Introduction to the Chemistry of Materials-E2	担当者所属職名・氏名	化学研究所　講師　MURDEY, Richard James		
群	自然科学科目群	分野(分類)	化学(基礎)	使用言語	英語
旧群	B群	単位数	2単位	週コマ数	1コマ	授業形態	講義（対面授業科目）
開講年度・開講期	2026・後期	曜時限	月4	配当学年	主として1・2回生	対象学生	理系向

[授業の概要・目的]

All our familiar objects - our cars, clothes, computers, and homes - are made out of materials. This course covers the essential chemistry behind common materials like metals, polymers, and ceramics. The lectures include key concepts in materials chemistry, including chemical bonding, crystal structures, and phase diagrams. You will learn about the physical properties of conductors, semiconductors, and insulators, and become familiar with the structure and synthesis of polymers and ceramics. The last part of the course provides an overview of modern advanced functional materials such as ferroelectrics, nanomaterials, and composites.

[到達目標]

This course provides students with an introduction to the chemical and physical properties of materials and their applications in technology.

[授業計画と内容]

1. Introduction
2. History of materials
3. Bonds
4. Metals and conductivity
5. Ceramics and glasses
6 Polymers
7. Dyes, paints, and coatings
8. Composites
9. Semiconductors
10. Superconductors
11. Ferroelectrics
12. Energy materials
13. Nanomaterials
14. Bioinspired materials
15. [no class]
16. Feedback

[履修要件]

特になし

Introduction to the Chemistry of Materials-E2(2)へ続く↓↓↓

Introduction to the Chemistry of Materials-E2(2)

[成績評価の方法・観点]

Each lecture will introduce a short homework assignment related to the topic covered. These assignments count for 70% of the final grade. Attendance and class participation count for 30%.

[教科書]

使用しない

[参考書等]

（参考書）

Harry R. Allcock 『Introduction to Materials Chemistry』
Robert J. Naumann 『Physics and Chemistry of Materials』
These textbooks may be useful as a reference or for self-study.

[授業外学修（予習・復習）等]

Weekly assignments are given to reinforce the main ideas presented in the lectures.

[その他（オフィスアワー等）]

[主要授業科目（学部・学科名）]