

Bioprocess Engineering

2 units (selection)

Yoshihisa Suzuki · ASSOCIATE PROFESSOR / PHYSICOCHEMISTRY AND MATERIAL SCIENCE, CHEMICAL SCIENCE AND TECHNOLOGY, EARTH AND LIFE ENVIRONMENTAL ENGINEERING

Target› This class introduces basic concepts and methods of protein crystallization.

Outline› Basic concepts, methods and recent developments of protein crystallization.

Style› Lecture

Keyword› *crystal growth, protein*

Fundamental Lecture› “**Basic Physical Chemistry**”(1.0)

Relational Lecture› “**Advanced Physical Chemistry**”(0.5)

Requirement› Students are required to have a good understanding of master course-level biochemical and biophysical sciences.

Goal› To understand the growth mechanisms of protein crystals

Schedule›

1. Structure analysis of protein molecules
2. Significance of protein crystallization
3. Fundamentals of crystal growth I : Solubility
4. Fundamentals of crystal growth II : Nucleation
5. Fundamentals of crystal growth III : Growth & Dissolution
6. Fundamentals of crystal growth IV : Characterization
7. Solubility of protein crystals
8. Nucleation of protein crystals
9. Growth of protein crystals
10. Surface morphologies of protein crystals
11. High pressure crystallization of protein molecules
12. Polymorphism of protein crystals
13. High pressure crystallography of protein molecules
14. Activation energy of the incorporation of protein molecules into crystals
15. Activation volume of the incorporation of protein molecules into crystals

Evaluation Criteria› Assignment counts 100%.

Textbook› To be announced in the class

Reference› To be announced in the class

Contents› <http://cms.db.tokushima-u.ac.jp/cgi-bin/toURL?EID=216733>

Contact›

⇒ Suzuki (G514, +81-88-656-7415, suzuki@chem.tokushima-u.ac.jp) MAIL