

Chemical Reaction Engineering

Special Subjects
Elective 2 credit

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1. Course Description

The methods of design the batch reactor, the continuous stirred tank reactor, and the tubular reactor will be studied. Group discussion is allowed when report is prepared at every exercise. In this lesson, we mainly acquire knowledge about DP1.

2. Course Objectives

The studies of Reactor design method and analysis of reaction kinetics.

3. Grading Policy

An average score of 60% or more from exercise reports of each lecture and the score of comprehensive exercise is required.

4. Textbook and Reference

Reference

HASHIMOTO, Kenji: "Chemical reaction engineering" (Baifukan) as reference book.

5. Requirements(Assignments)

We will apply the contents of previous lectures often, please read and review essential points in the notes (30 minutes). Preparation for each lesson : Contents and amount of preparation will be advised in writing, etc. at the end of the last lesson.

6. Note

7. Schedule

- [1] Outline of chemical reaction engineering
- [2] Base of chemical reaction engineering
- [3] Reaction kinetics
- [4] Classification of reactors
- [5] Batch reactor (Mass balance equation)
- [6] Batch reactor (Integral for reaction kinetics)
- [7] Continuous stirred tank reactor (Mass balance equation)
- [8] Continuous stirred tank reactor (Integral for reaction kinetics)
- [9] Tubular reactor (Mass balance equation)
- [10] Tubular reactor (Integral for reaction kinetics)
- [11] Analysis of reaction kinetics (Batch reactor)
- [12] Analysis of reaction kinetics (Continuous stirred tank reactor and Tubular reactor)
- [13] Multiple reaction
- [14] Gas-solid reaction
- [15] Integrated study and summary