Transport Process Engineering

2 units (selection)

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Target〉 The purpose of this class is to understand the transport phenomena on the interface of differential phases (gas, liquid and solid) for production and environmental preservation processes.

Outline〉 Interfacial mass transfer analysis in various production and environmental processes, with an emphas is on the process systemization based on the manipulation of fluid flow near material surfaces and molecular transport in functional materials matrices. Analysis and design of chemical separation processes in terms of the molecular transport control within membranes and porous structures. Design of high functional porous micro-structured materials and spectroscopic analysis of molecular transfer phenomina in these materials.

Style〉 Portfolio

Keyword〉 *mass transfer, separation processes*

Fundamental Lecture〉 "**Advanced Separation Technology**"(1.0)

Requirement〉 Nothing special

Notice〉 授業を受ける際には，2時間の授業時間毎に2時間の予習と2時間の復習をした上で授業を受けることが，授業の理解と単位取得のために必要である．

Goal〉

1. To understand transport phenomena on interface of differential phases
2. To understand analysis method of the phenomena in micro porous for separation processes

Schedule〉

1. The principle of mass transfer
2. Mass transfer on gas-liquid interface
3. Mass transfer on gas-solid interface
4. Mass transfer on solid-liquid interface
5. Mass transfer process using membrane
6. Adsorption separation processes
7. Adsorption velocity and diffusion
8. Porous materials
9. Synthesis of porous materials
10. Analysis of porous materials
11. Adsorption processes using zeolites
12. The control of molecular transfer in micro porous materials
13. High functionalized porous materials
14. Analysis of solid materials by IR spectroscopy
15. Spectroscopic analysis for phenomena in porous materials

Evaluation Criteria〉 Assignment counts 100% mainly based on the report submitted.

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=216554

Student〉 Able to be taken by only specified class(es)

Contact〉

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