Advanced polymer design for energy materials

ENR.H503

No.1

1Q 1-0-0

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Friday1・2 H117

Aims

- There are many limitation for synthesis of polymers as energy materials. This course focuses strategy of polymerization for energy materials, based on metal free polymerization of well-define polymer, emulsion polymerization for mass production., poly(acrylic acid) with different architecures, highly transparent and hard organic-silica nanomaterials. The concept of Smith-Ewart theory is an essential tool to analyze and design the emulsion polymerization. This approach is not only useful for energy materials, but is applicable to medial and other materials . Students will have the chance to tackle practical problems by applying knowledge acquired through this course. This course facilitates students' understanding of development of novel materials in polymer field.

Schedules

	Date	Content
1	April 12	Overview of radical polymerization and emulsions
2	April 19	Smith-Ewart theory I
3	April 26	Smith-Ewart theory II
4	May 10	Emulsion Co-polymerization
5	May 17	Semi-batch polymerization
6	May 24	Emulsion polymerization on living radical polymerization
7	May 31	Self-study
8	June 8	Summery and examination

All contents of lecture are uploaded in OCW-i.

References

- “Catalysis in Micellar and Macromolcular Systems”, Janos H. Fendler and Eleanor J. Fendler, Academic Press
- “INTERMOLECUAR AND SURFACE FORCES”, Jacob N. Israelachvili, Academic Press
- “EMULSION POLYMERIZATION AND EMULSION POLYMERS” Peter A. Lovell and Mohamed S. El-Aasser, Wiley
- http://www.firp.ula.ve/archivos/historicos/76_Book_HLB_ICI.pdf