10810CHEM576000 化學動力學 Chemical Kinetics

(Time: T3T4F2; Room: CHEM 326; Credit: 3)

**強烈建議大學部同學選修此門課程前已修習過大學部課程物理化學三

Contents	Date
Introduction	9/10
Basic concepts of chemical kinetics (CH1&CH2): rate laws & Arrhenius equation	9/17, 9/20
Complex reactions (CH2&CH2): analytic solution, approximation methods, Laplace transform, numerical methods	9/24, 9/27, 10/1, 10/4,
Kinetic measurements (CH3): techniques and data analysis	10/8, 10/15, 10/18, 10/22
Transport properties (CH4): mass transport, diffusion, and thermal transport	10/25, 10/29, 11/1, 11/8
Reaction in condensed phase (CH4&CH5): cage effect, diffusion and conduction	11/12, 11/15, 11/19
Catalysis and heterogeneous reaction (CH5&CH6)	11/22, 11/26, 11/29
Macroscopic & microscopic level (CH6): cross section and rate coefficients	12/3
Potential energy surfaces (CH7): empirical and molecular bonding potentials, reaction paths	12/3, 12/6, 12/13
Dynamics of molecular collisions (CH8&CH1): hard-sphere model, two-body-scattering, electronically nonadiabatic processes	12/17, 12/20, 12/24,
Transition state theory, energy transfer and electron transfer (CH10+12&CH5)	12/27, 12/31

停課日: 9/13 (中秋節), 10/11 (彈性放假)

考試日期：11/5 (二)、12/10 (二)、1/7 (二)，10:00–13:30，共 3.5 小時

授課教師:朱立岡

上課方式:板書+投影片

教科書:

Chemical Kinetics and Dynamics, 2nd Ed., J. I. Steinfeld, J. S. Francisco, W. L. Hase, Prentice-Hall, Inc., 1999.

Chemical Kinetics and Reaction Dynamics, P. L. Houston, 1st Ed., McGraw-Hill Intl. Ed., 2001.

參考書目(e-book，可從清大圖書館獲得):

Chemical kinetics from molecular structure to chemical reactivity, 1st Ed., L. Arnaut, S. Formosinho, H. Burrows, Elsevier, 2006.

成績評量: in-class exams ×3