

ChE 103c
TRANSPORT PHENOMENA (MASS TRANSPORT)

SPRING QUARTER 2005

1:00-2:30 TTH, 106 SPALDING

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Topic	References	Chapter from Text
1. Binary Diffusion		
(i) gases	B-F, I, J, K	17
(ii) liquids	B-F, I, J, K	17
(iii) solids	B,C, E, J, K	--
(iv) porous media	B, C, E, F, J, K	18, 24
2. Multicomponent Diffusion		
(i) homogeneous media	B, C, E, F, I, J, L	19
(ii) heterogeneous media	E, G, L	–
3. Diffusion–Reaction	B, C, E, F, J, K, L	18, 24
4. Convective Mass Transport	B, C, D, F, I, J, K, L	21
5. Interphase Mass Transport	A-F, I, J, K	23
6. Unsteady-state Mass Transport	B, I, K	20
7. Projects		

Grading

40% Midterm Exam
40% Final Exam
20% Homework

Text: R.B. Bird, W.E. Stewart and E.N. Lightfoot, Transport Phenomena, 2nd ed., Wiley and Sons, New York (2002).

References

- A. E.J. Henley and J.D. Seader, Equilibrium-Stage Separation Operations in Chemical Engineering, Wiley, New York (1981).
- B. R.B. Bird, W.E. Stewart and E.N. Lightfoot, Transport Phenomena, 1st ed., Wiley, New York (1960).
- C. C.J. Geankoplis, Transport Processes and Unit Operations, 3rd ed., Prentice Hall, Englewood Cliffs, NJ (1993).
- D. F.P. Incropera and D.P. DeWitt, Fundamentals of Heat and Mass Transfer, Wiley, New York (1990).
- E. C.J. Geankoplis, Mass Transport Phenomena, Holt, Rinehart and Winston, New York (1972).
- F. R.E. Treybal, Mass Transfer Operations, 3rd ed., McGraw-Hill, New York (1980).
- G. E.A. Mason and A.P. Malinauskas, Gas Transport in Porous Media: The Dusty-Gas Model, Elsevier, Amsterdam (1983).
- H. P.V. Danckwerts, Gas-Liquid Reactions, McGraw-Hill, New York (1970).
- I. A.H.P. Skelland, Diffusional Mass Transfer, Wiley, New York (1974).
- J. R. Fahien, Fundamentals of Transport Phenomena, McGraw-Hill, New York (1983).
- K. J.R. Welty, C.E. Wicks, R.E. Wilson and G. Rorrer, eds., Fundamentals of Momentum, Heat and Mass Transfer, 4th ed., Wiley, New York (2001).

L. M.E. Davis and R.J. Davis, Fundamentals of Chemical Reaction Engineering, McGraw-Hill, New York (2003).