

POD 26 : Lecture 15-21 summary ①

Lecture 15
p. 214-229

- Radiative Heat Transport
- Kirchhoff's Law ($a = e$)
 - Stefan-Boltzmann Law
 - transport between parallel planes
 - combination of radiation & convect transp
 - spectral effects / rad shields

Lec. 16
p. 230-241

- Fick's Law & Cons. eq'ns
- Where mass dif. comes from
 - Stokes-Einstein dif / Brownian motion
 - mass & molar basis: convection from diffusion

Lec. 17

Stefan Tube

p. 242-252

- How to calc. mass flux for non-dilute CA
- parallel between heat & mass transp (if dilute they're the same!)

Lec. 18

Mass Transf w/ Rxa : Thiele Modulus

p. 253-263

- Equimolar counter diffusion
- Thiele modulus: measure of dif. mass transf. limitations
- effectiveness factor for cat. pellets

Lec. 19 D.S. fⁿ w/ homog. rxn in Liquids
 p. 264-277 - first order homogeneous rxn (gen. sol.)
 - Hatta number (dim rxn rate)
 - application of model to parameter extraction from expts

Lec. 20 Conv. D.S. fⁿ in to falling film
 p. 278-292 - mass transfer into falling film
 - SS conv. D.S. fⁿ
 - mass transfer coef. from BL analysis
 - parallel between ht & mass trans. coef.

Lecture 21 Gas-Liquid Stripping
 p. 293-306 - How to size a stripper
 - overall mass transf. coef
 - waltz through of $k_L a$ calc.