

AOS 580 AEROSOL, CLOUD AND CLIMATE

Lecture 6: Aerosol Chemistry II (Instructor: Yi Ming)

Reading

Seinfeld & Pandis (SP) p.337-353, 361-363

Class notes

1. Chemical reaction in aqueous phase
Prevalence of clouds made up of tiny droplets
Characteristics: good solvent, good medium for reaction, and high specific surface area.
2. Henry's law
Describes the equilibrium of a species between the gas and aqueous phases.
Example: Distribution of CO₂ and SO₂ in clouds
3. Aqueous-phase chemical equilibria
Dissociation into ions
Dissociation of water: definition of pH value
Dissociation of SO₂
 - 3.1 Multiple steps in dissociation
 - 3.2 Dependence of S(IV) species on pH
 - 3.3 Effective Henry's law coefficient
4. Oxidation of SO₂
 - 4.1 By ozone
Complex dependence of rate constant on pH
 - 4.2 By hydrogen peroxide
Independence of rate constant on pH