

AME60630: MICROPARTICLE DYNAMICS
FALL 2010
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<u>Lecture No.</u>	<u>Date</u>	<u>Topic</u>
1	8/25	introduction; multiphase flows, aerosol definitions
2	8/27	solid angle, collision cross-section, mean free path
3	8/30	gases (perfect and real), compressibility factor, equations of state mixtures, other gas properties, statistics
4	9/1	kinetic theory: derivation, distributions (velocity and speed)
5	9/6	kinetic theory: models for T, p, and transport properties
6	9/8	plasma, plasma charging
7	9/13	aerosol charging
8	9/15	computational methods for molecular dynamics
9	9/20	“
10	9/22	particle motion in a fluid: coupling, packing, number density
11	9/27	Maxey-Riley paper, the BBO equation derivation
12	9/29	BBO equation terms, forces, drag force models
13	10/4	settling velocity, mobility, particle distribution function
14	10/6	various diameters, shape factor, slip, nondimensional BBO
15	10/11	modeling (analytical and numerical) approaches and situations
16	10/13	mid-term examination
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17	10/25	diffusion: Fick's laws
18	10/27	Brownian motion, osmotic pressure, D , λ_p
19	11/1	some diffusion equation solutions
20	11/3	coagulation
21	11/8	condensation
22	11/10	evaporation
23	11/15	forces contributing to particle/surface adhesion
24	11/17	normal and oblique impacts with smooth and rough surfaces
25	11/22	particle detachment and re-entrainment, resuspension modeling
26	11/29	molecular dynamics
27	12/1	project presentations
28	12/6	project presentations
29	12/8	second examination