

Contents

Part I Dynamics of Liquid Jets, Sheets and Drops

1	Capillary Instability of Free Liquid Jets	3
	N. Ashgriz and A.L. Yarin	
2	Bending and Buckling Instabilities of Free Liquid Jets: Experiments and General Quasi-One-Dimensional Model	55
	A.L. Yarin	
3	Instability of Liquid Sheets	75
	N. Ashgriz, X. Li, and A. Sarchami	
4	Dynamics of Liquid Droplets	97
	A. Mashayek and N. Ashgriz	
5	Oscillation of Droplets and Bubbles	125
	N. Ashgriz and M. Movassat	
6	Droplet Deformation and Breakup	145
	D.R. Guildenbecher, C. López-Rivera, and P.E. Sojka	
7	Droplet Collision	157
	G. Brenn	
8	Droplet Impact on a Solid Surface	183
	A.L.N. Moreira, A.S. Moita, and S. Chandra	

Part II Atomization and Spray Models

9	Atomization Models	215
	C.A. Chryssakis, D.N. Assanis, and F.X. Tanner	
10	Flashing Sprays	233
	R. Karami and N. Ashgriz	
11	Supercritical and Transcritical Injection	255
	P. Seebald and P.E. Sojka	
12	Evaporating Sprays	263
	F.X. Tanner	
13	Reacting Sprays	279
	F.X. Tanner	
14	Spray Group Combustion	299
	A. Umemura	
15	Droplet Evaporation in the Non-continuum Regime	315
	E.J. Davis	
16	Droplet Freezing and Solidification	327
	F.X. Tanner	
17	Numerical Techniques for Simulating the Atomization Process	339
	N. Ashgriz	
18	Modeling Atomization Using Boundary Element Methods (BEM) ...	359
	S.S. Yoon and S.D. Heister	
19	Continuum-Based Methods for Sprays	383
	F.X. Tanner	
20	Lattice Boltzmann Method for Sprays	425
	K.N. Premnath and J. Abraham	
21	Spray-Wall Impact	441
	A.L.N. Moreira and M.R. Oliveira Panão	
22	Interacting Sprays	457
	J.B. Greenberg	

Part III Atomizers and Spray Generators

23 Drop Size Distributions	479
A. Déchelette, E. Babinsky, and P.E. Sojka	
24 Spray Nozzles	497
K. Omer and N. Ashgriz	
25 Drop-on-Demand Drop Generators	581
M. Eslamian and N. Ashgriz	
26 Droplet Stream Generator	603
G. Brenn	
27 Plain Orifice Spray Nozzles	625
S.D. Heister	
28 Pintle Injectors	647
S.D. Heister	
29 Atomization of a Liquid Jet in a Crossflow	657
A. Mashayek and N. Ashgriz	
30 Impinging Jet Atomization	685
N. Ashgriz	
31 Splash Plate Atomizers	709
A. Sarchami and N. Ashgriz	
32 Electrospays	727
F. Sultan, N. Ashgriz, D.R. Guildenbecher, and P.E. Sojka	
33 Swirl, T-Jet and Vibrating-Mesh Atomizers	755
M. Eslamian and N. Ashgriz	

Part IV Spray Applications

34 Spray Applications in Internal Combustion Engines	777
K. Lee and J. Abraham	
35 Spray Modeling and Predictive Simulations in Realistic Gas-Turbine Engines	811
S.V. Apte and P. Moin	

36	Melt Atomization	837
	B. Zheng and E.J. Lavernia	
37	Spray Drying, Spray Pyrolysis and Spray Freeze Drying	849
	M. Eslamian and N. Ashgriz	
38	Low-pressure Spray Pyrolysis	861
	W.-N. Wang, A. Purwanto, and K. Okuyama	
39	Flame Spray Pyrolysis	869
	A. Purwanto, W.-N. Wang, and K. Okuyama	
40	Particle Production via Emulsion Combustion Spray Method	881
	M. Eslamian, M. Ahmed, and N. Ashgriz	
41	Pharmaceutical Aerosol Sprays for Drug Delivery to the Lungs ...	899
	W.H. Finlay	
42	Fire Suppression	909
	C. Presser and J.C. Yang	
	Index	927

Handbook of Atomization and Sprays

Theory and Applications

Ashgriz, N. (Ed.)

2011, XVI, 936 p., Hardcover

ISBN: 978-1-4419-7263-7