気泡流実験データ

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参照する文献名	日引俊, 賞雅寛而, Mamoru Ishii, 微小重力条件下におけるドリフトフラックスモデルの開発, 日本機械学会論文集（B編）70巻696号, pp. 2043-2050, 2004.

実験条件

微小重力 (10^-5～-6)

実験No	Lp (mm)	ゲージ圧力 (KPa)	j_g (m/s)	j_f (m/s)	Re_g	Re_f
1	0.75	330	0.010	0.330	27	2300
2	0.75	360	0.009	0.174	25	1200
3	0.25	360	0.009	0.156	25	1100
4	0.25	360	0.009	0.222	24	1500
5	0.5	370	0.010	0.440	27	2900
6	0.75	380	0.009	0.403	25	2700
7	0.5	360	0.010	0.280	27	1900
8	0.5	370	0.009	0.530	25	3600

通常重力

実験No	Lp (mm)	ゲージ圧力 (KPa)	jg (m/s)	jf (m/s)	Reg	Ref
1	0.75	330	0.010	0.326	26	2200
2	0.75	360	0.009	0.168	25	1100
3	0.25	360	0.009	0.154	25	1000
4	0.25	360	0.009	0.218	25	1500
5	0.5	370	0.010	0.437	27	2900
6	0.75	380	0.009	0.403	26	2700
7	0.5	360	0.010	0.272	27	1800
8	0.5	370	0.009	0.529	27	3600

10-5 G - 1 G

実験No	Lp (mm)	ゲージ圧力 (KPa)	jg (m/s)	jf (m/s)	Reg	Ref
1	0.75	330	0.010	0.330	27	2200
2	0.75	360	0.009	0.170	26	1200
3	0.25	360	0.009	0.150	25	1000
4	0.25	360	0.009	0.220	25	1500
5	0.5	370	0.010	0.440	27	2900
6	0.75	380	0.009	0.400	26	2700
7	0.5	360	0.010	0.280	27	1900
8	0.5	370	0.009	0.530	27	3600

ボイド率

実験No	z/D			
	5	20	40	60
1	0.018421	0.021832	0.02027	
2	0.02717	0.027661	0.02627	0.018426
3	0.032079	0.033623	0.025077	0.018965
4	0.020534	0.019239	0.015	0.015121
5	0.01898	0.014487	0.012975	0.010644
6	0.010163	0.00991	0.009065	0.007338
7	0.021697	0.021172	0.023447	0.017864
8	0.010294		0.010095	0.008997

実験No		1	2	3	4	5	6	7	8
z/D	5	0.018421	0.02717	0.032079	0.020534	0.01898	0.010163	0.021697	0.010294
	20	0.021832	0.027661	0.033623	0.019239	0.014487	0.00991	0.021172	
	40	0.02027	0.02627	0.025077	0.015	0.012975	0.009065	0.023447	0.010095
	60		0.018426	0.018965	0.015121	0.010644	0.007338	0.017864	0.008997

界面面積濃度

実験No	z/D			
	5	20	40	60
1	53.57782	56.02089	45.705	
2	47.2099	42.79437	35.5192	26.77959
3	76.06449	56.49229	36.11344	27.77699
4	35.30564	32.25218	24.20231	22.6664
5	65.33289	44.62612	36.63494	28.66897
6	35.71614	33.18587	26.65386	19.6118
7	70.67991	58.49718	52.30429	36.76421
8	46.08356		37.50375	28.46894

実験No		1	2	3	4	5	6	7	8
z/D	5	53.57782	47.2099	76.06449	35.30564	65.33289	35.71614	70.67991	46.08356
	20	56.02089	42.79437	56.49229	32.25218	44.62612	33.18587	58.49718	
	40	45.705	35.5192	36.11344	24.20231	36.63494	26.65386	52.30429	37.50375
	60		26.77959	27.77699	22.6664	28.66897	19.6118	36.76421	28.46894

ザウタ平均径

実験No	z/D			
	5	20	40	60
1	2.062922	2.338248	2.660996	
2	3.453065	3.87823	4.437667	4.128411
3	2.530405	3.571041	4.166337	4.096541
4	3.489591	3.579061	3.718619	4.002793
5	1.743068	1.947775	2.125001	2.227564
6	1.707271	1.791694	2.040577	2.244903
7	1.841871	2.17162	2.689721	2.915501
8	1.34031		1.615065	1.8962

実験No		1	2	3	4	5	6	7	8
z/D	5	2.062922	3.453065	2.530405	3.489591	1.743068	1.707271	1.841871	1.34031
	20	2.338248	3.87823	3.571041	3.579061	1.947775	1.791694	2.17162	
	40	2.660996	4.437667	4.166337	3.718619	2.125001	2.040577	2.689721	1.615065
	60		4.128411	4.096541	4.002793	2.227564	2.244903	2.915501	1.8962

気泡数密度分布

実験No	z/D			
	5	20	40	60
1	5039180	4319987	4024089	
2	1616393	1059867	742734.4	883883.8
3	6468277	1975535	1561587	1493611
4	1127441	971822.6	891495.3	919635.1
5	8756631	3479992	3817144	3143292
6	4884699	3296174	2866270	2053420
7	8456487	5308278	4013478	3009830
8	9570295		5795829	3390893

実験No		1	2	3	4	5	6	7	8
z/D	5	5039180	1616393	6468277	1127441	8756631	4884699	8456487	9570295
	20	4319987	1059867	1975535	971822.6	3479992	3296174	5308278	
	40	4024089	742734.4	1561587	891495.3	3817144	2866270	4013478	5795829
	60		883883.8	1493611	919635.1	3143292	2053420	3009830	3390893

ボイド率

実験No	z/D			
	5	20	40	60
1	0.019836	0.018151	0.016475	
2	0.018513	0.020098	0.016884	
3	0.019778	0.019568	0.017795	
4	0.012333	0.012564	0.015824	
5	0.014301	0.014681	0.015276	
6	0.011848	0.012757	0.011461	
7	0.015963	0.019259	0.016091	
8	0.014564		0.014388	

実験No		1	2	3	4	5	6	7	8
z/D	5	0.019836	0.018513	0.019778	0.012333	0.014301	0.011848	0.015963	0.014564
	20	0.018151	0.020098	0.019568	0.012564	0.014681	0.012757	0.019259	
	40	0.016475	0.016884	0.017795	0.015824	0.015276	0.011461	0.016091	0.014388
	60								

界面面積濃度

実験No	z/D			
	5	20	40	60
1	69.09706	57.7294	48.36894	
2	54.74802	55.36269	44.75558	
3	65.5492	57.97873	47.20678	
4	33.19858	31.50199	34.95854	
5	61.03667	46.40687	41.36919	
6	47.07617	40.81805	32.8852	
7	52.53961	51.56884	42.31499	
8	67.17536		40.64842	

実験No		1	2	3	4	5	6	7	8
z/D	5	69.09706	54.74802	65.5492	33.19858	61.03667	47.07617	52.53961	67.17536
	20	57.7294	55.36269	57.97873	31.50199	46.40687	40.81805	51.56884	
	40	48.36894	44.75558	47.20678	34.95854	41.36919	32.8852	42.31499	40.64842
	60								

ザウタ平均径

実験No	z/D			
	5	20	40	60
1	1.722485	1.886542	2.043689	
2	2.028856	2.178104	2.263505	
3	1.8104	2.024982	2.261807	
4	2.228862	2.392987	2.715965	
5	1.405842	1.898068	2.215632	
6	1.510014	1.875204	2.091041	
7	1.823007	2.240811	2.281627	
8	1.300852		2.123743	

実験No		1	2	3	4	5	6	7	8
z/D	5	1.722485	2.028856	1.8104	2.228862	1.405842	1.510014	1.823007	1.300852
	20	1.886542	2.178104	2.024982	2.392987	1.898068	1.875204	2.240811	
	40	2.043689	2.263505	2.261807	2.715965	2.215632	2.091041	2.281627	2.123743
	60								

気泡数密度分布

実験No	z/D			
	5	20	40	60
1	8183893	5377715	4139217	
2	3637494	3093566	2358289	
3	6893440	3768807	2747461	
4	1817169	1476087	1326401	
5	12696602	4098120	2967298	
6	6593325	3663723	2614824	
7	5957890	3273351	2751023	
8	14613079		3486097	

実験No		1	2	3	4	5	6	7	8
z/D	5	8183893	3637494	6893440	1817169	12696602	6593325	5957890	14613079
	20	5377715	3093566	3768807	1476087	4098120	3663723	3273351	
	40	4139217	2358289	2747461	1326401	2967298	2614824	2751023	3486097
	60								

微小重力（10^-5～-6）

実験No	z/D	j_g	j_f	Re_f	ゲージ圧力	ボイド率	界面積濃度	ザウター径	気泡数密度分布
		m/s	m/s		KPa	%	m^{-1}	mm	$\times 10^6 n/m^3$
1	5	0.010	0.330	2300	330	1.84	53.6	2.06	5.04
1	20	0.010	0.330	2300	330	2.18	56.0	2.34	4.32
1	40	0.010	0.330	2300	330	2.03	45.7	2.66	4.02
1	60	0.010	0.330	2300	330				
2	5	0.009	0.174	1200	360	2.72	47.2	3.45	1.62
2	20	0.009	0.174	1200	360	2.77	42.8	3.88	1.06
2	40	0.009	0.174	1200	360	2.63	35.5	4.44	0.74
2	60	0.009	0.174	1200	360	1.84	26.8	4.13	0.88
3	5	0.009	0.156	1100	360	3.21	76.1	2.53	6.47
3	20	0.009	0.156	1100	360	3.36	56.5	3.57	1.98
3	40	0.009	0.156	1100	360	2.51	36.1	4.17	1.56
3	60	0.009	0.156	1100	360	1.90	27.8	4.10	1.49
4	5	0.009	0.222	1500	360	2.05	35.3	3.49	1.13
4	20	0.009	0.222	1500	360	1.92	32.3	3.58	0.97
4	40	0.009	0.222	1500	360	1.50	24.2	3.72	0.89
4	60	0.009	0.222	1500	360	1.51	22.7	4.00	0.92
5	5	0.010	0.440	2900	370	1.90	65.3	1.74	8.76
5	20	0.010	0.440	2900	370	1.45	44.6	1.95	3.48
5	40	0.010	0.440	2900	370	1.30	36.6	2.13	3.82
5	60	0.010	0.440	2900	370	1.06	28.7	2.23	3.14
6	5	0.009	0.403	2700	380	1.02	35.7	1.71	4.88
6	20	0.009	0.403	2700	380	0.99	33.2	1.79	3.30
6	40	0.009	0.403	2700	380	0.91	26.7	2.04	2.87
6	60	0.009	0.403	2700	380	0.73	19.6	2.24	2.05
7	5	0.010	0.280	1900	360	2.17	70.7	1.84	8.46
7	20	0.010	0.280	1900	360	2.12	58.5	2.17	5.31
7	40	0.010	0.280	1900	360	2.34	52.3	2.69	4.01
7	60	0.010	0.280	1900	360	1.79	36.8	2.92	3.01
8	5	0.009	0.530	3600	370	1.03	46.1	1.34	9.57
8	20	0.009	0.530	3600	370				
8	40	0.009	0.530	3600	370	1.01	37.5	1.62	5.80
8	60	0.009	0.530	3600	370	0.90	28.5	1.90	3.39

通常重力

実験No	z/D	j_g	j_f	Re_f	ゲージ圧力	ボイド率	界面積濃度	ザウタ径	気泡数密度分布
		m/s	m/s		KPa	%	m^{-1}	mm	$\times 10^6 n/m^3$
1	5	0.010	0.326	2200	330	1.98	69.1	1.72	8.18
1	20	0.010	0.326	2200	330	1.82	57.7	1.89	5.38
1	40	0.010	0.326	2200	330	1.65	48.4	2.04	4.14
1	60	0.010	0.326	2200	330				
2	5	0.009	0.168	1100	360	1.85	54.7	2.03	3.64
2	20	0.009	0.168	1100	360	2.01	55.4	2.18	3.09
2	40	0.009	0.168	1100	360	1.69	44.8	2.26	2.36
2	60	0.009	0.168	1100	360				
3	5	0.009	0.154	1000	360	1.98	65.5	1.81	6.89
3	20	0.009	0.154	1000	360	1.96	58.0	2.02	3.77
3	40	0.009	0.154	1000	360	1.78	47.2	2.26	2.75
3	60	0.009	0.154	1000	360				
4	5	0.009	0.218	1500	360	1.23	33.2	2.23	1.82
4	20	0.009	0.218	1500	360	1.26	31.5	2.39	1.48
4	40	0.009	0.218	1500	360	1.58	35.0	2.72	1.33
4	60	0.009	0.218	1500	360				
5	5	0.010	0.437	2900	370	1.43	61.0	1.41	12.70
5	20	0.010	0.437	2900	370	1.47	46.4	1.90	4.10
5	40	0.010	0.437	2900	370	1.53	41.4	2.22	2.97
5	60	0.010	0.437	2900	370				
6	5	0.009	0.403	2700	380	1.18	47.1	1.51	6.59
6	20	0.009	0.403	2700	380	1.28	40.8	1.88	3.66
6	40	0.009	0.403	2700	380	1.15	32.9	2.09	2.61
6	60	0.009	0.403	2700	380				
7	5	0.010	0.272	1800	360	1.60	52.5	1.82	5.96
7	20	0.010	0.272	1800	360	1.93	51.6	2.24	3.27
7	40	0.010	0.272	1800	360	1.61	42.3	2.28	2.75
7	60	0.010	0.272	1800	360				
8	5	0.009	0.529	3600	370	1.46	67.2	1.30	14.61
8	20	0.009	0.529	3600	370				
8	40	0.009	0.529	3600	370	1.44	40.6	2.12	3.49
8	60	0.009	0.529	3600	370				