

**Marangoni Dynamic Surf series-1**

[acronym]  
 AR: Aspect Ratio (=Length/Dia.=L/D)  
 C/O: check out  
 CD: Cooling Disk  
 Dia.: Diameter  
 DSD : Dynamic Surf Deformation  
 ΔT: Temperature difference between Cooling disk and Heating disk  
 Exp.: Experiment  
 GMT: Greenwich Mean Time  
 H: Liquid Bridge Length [mm]  
 HD: Heating Disk  
 IR: Infrared (Infrared image)  
 JST: Japan Standard Time (=GMT+9h)

[acronym]  
 L/D: Length/Diameter (ratio of liquid bridge length to liquid bridge diameter)  
 L/R: Length/Radius (ratio of liquid bridge length to liquid bridge radius)  
 LB: Liquid Bridge  
 N/A: Not Applicable  
 VR: Volume Ratio (=actual Liquid Bridge volume/straight Liquid Bridge volume)  
 V/V<sub>0</sub>: actual Liquid Bridge volume / straight Liquid Bridge volume  
 UVP: Ultrasonic Velocity Profiler

[glossary]  
 CD posn: Cooling disk position on telemetry data from initialized point  
 Corrected LB Length[mm]=""CD posn"" on telemetry data""+""initial gap""  
 initial gap: correction value of distance between disks

[Information]

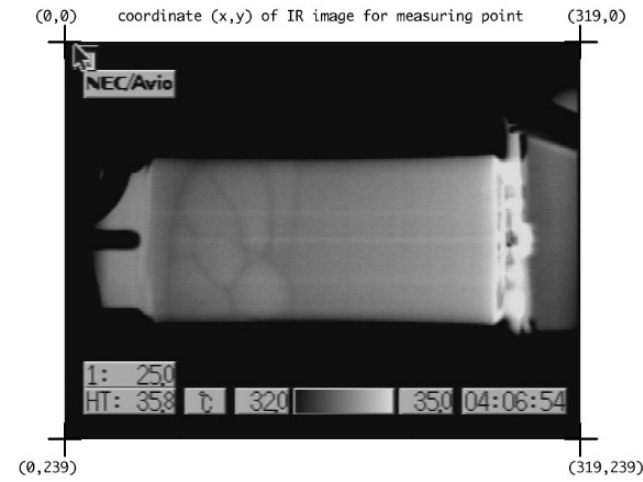
Correction value	surrounding gas
Corrected HD temperature = HD temperature of telemetry (H-D ITO1 Temp) + 0.1[K]	Argon(96%)+Air(4%)

[Experiment sample]

	Material name	Manufacture	Model number, Character	amount	density @25 degree C [kg/m <sup>3</sup> ]	kinematic viscosity @25degree C [m <sup>2</sup> /s]	temperature coefficient of surface tension [N/mK]	Thermal diffusivity [m <sup>2</sup> /s]
Working fluid	silicone oil	Shin-Etsu Chemical Co., Ltd.	KF-96L-5CS	-	912.35	5.00E-06	-6.58E-05	7.46E-08
Dye	N/A							
Tracer particles	Gold-coated acrylic sphere particles	Soken Chemical & Engineering Co., Ltd.	Dia.=200 micrometer	2000 particles	1296.23	N/A	N/A	-

[Experiment Table]

Exp. No. unit	Exp. Day(JST) YYYY/MM/DD	Team	Exp. Day (GMT) YYYY/MM/DD-DD	Disk Dia. [mm]	Target LB Length (corrected) [mm]	initial gap [mm]	"CD posn" at Exp. end [mm]	AR (L/D)	Typical VR (V/V <sub>0</sub> )	Target	measuring point in IR image, coordinate (X1, Y1), see Pic.-1	MIDM image position from HD surface (Edge) (mm)	note	
														recording status
DS1-C/O1 (DS1-01)	2013/09/30		2013/09/29-30	30	-	0.24	0	-	-	functional check		-	checkout operation	without VRU Rec.
DS1-C/O2 (DS1-02)	2013/10/02		2013/10/01-02	30	-	0.24	0	-	-	functional check		-	checkout operation (cont.)	without VRU Rec.
DS1-03	2013/10/03		2013/10/02-03	30	15.00	3.00	0	0.50	0.98 0.99 0.97	measurement of DSD		2.0 2.0 2.0, 1.0	-	without VRU Rec.
DS1-04	2013/10/05		2013/10/04-05	30	30.00	3.00	0	1.00	0.95	measurement of DSD		2.0	22:30-00:10 air bubbel removal	without VRU Rec.
DS1-05	2013/10/11		2013/10/10-11	30	37.50	3.00	0	1.25	0.95	measurement of DSD, critical ΔT		2.0	-	with VRU Rec.
DS1-06	2013/10/12		2013/10/11-12	30	15.00	3.00	0	0.50	1.00	measurement of DSD		from 0.2 to 15.5	No IR image in VRU	with VRU Rec.
DS1-07	2013/10/17		2013/10/16-17	30	30.00	3.00	0	1.00	1.00	measurement of DSD		from 0.2 to 4.2	VRU ch4 Error	with VRU Rec.
DS1-08	2013/10/18		2013/10/17-18	30	60.00	3.00	0	2.00	0.95	measurement of DSD		2.0	-	with VRU Rec.
DS1-09	2013/10/22		2013/10/21-22	30	15.00	3.00	0	0.50	1.00	influence of cooling disk temp., flow transition		2.0	-	with VRU Rec.
DS1-10	2013/10/23		2013/10/22-23	30	15.00	3.00	0	0.50	1.00	measurment of DSD, flow transition		2.0	No data from GMT22:37 to 22:50	with VRU Rec.
DS1-11	2013/10/25		2013/10/24-25	30	30.00	3.00	0	1.00	1.00	measurment of DSD, flow transition, oscillation mode		2.0	No movie from GMT04:25 to 05:34 and the telemetry data after 4:25 is lacked intermittently.	with VRU Rec.
DS1-12	2013/12/27		2013/12/26-27	30	15.00	3.00	0	0.50	1.00	critical ΔT		2.0	Experiment was canceled due to FPEF error at GMT00:04. After GMT02:24, the initial gap is 14.99mm in this run.	with VRU Rec.
DS1-13	2014/01/09		2014/01/08-09	30	15.00	3.00	0	0.50	0.80 0.60 1.00	critical ΔT measurement of DSD, critical ΔT critical ΔT		- 2.0 -	- - -	without VRU Rec.
DS1-14	2014/01/10		2014/01/09-10	30	15.00	3.00	0	0.50	0.60	critical ΔT		2.0	-	without VRU Rec.
DS1-15	2014/01/11		2014/01/10-11	30	15.00	3.00	0	0.50	1.00	influence to critical point by cooling disk temp.		2.0	-	without VRU Rec.
DS1-16	2014/01/13		2014/01/12-13	30	45.00	3.00	0	1.50	0.95	critical ΔT		2.0	-	with VRU Rec.
DS1-17	2014/01/14		2014/01/13-14	30	15.00	3.00	0	0.50	0.60	critical ΔT		2.0	FPEF restarted from GMT23:57 to 00:15.	with VRU Rec.
DS1-18	2014/01/15		2014/01/14-15	30	60.00	3.00	0	2.00	0.95	influence to critical point by cooling disk temp.		2.0	-	with VRU Rec.
DS1-19	2014/01/21		2014/01/20-21	30	15.00	3.00	0	0.50	0.60	influence to critical point by cooling disk temp.		2.0	-	without VRU Rec.
DS1-20	2014/01/22		2014/01/21-22	30	15.00 30.00	3.00	0	0.50 1.00	0.60 1.00	influence to critical point by cooling disk temp.		2.0 2.0	- -	without VRU Rec.
DS1-21	2014/01/23		2014/01/22-23	30	15.00	3.00	0	0.50	1.01	measurement of DSD		from 0.0 to 15.2	-	with VRU Rec.
DS1-22	2014/01/24		2014/01/23-24	30	60.00 15.00	3.00	0	2.00 0.50	0.95 0.60	critical ΔT		-	-	with VRU Rec.
DS1-23	2014/01/29		2014/01/28-29	30	30.00	3.00	0	1.00	1.00	influence to critical point by cooling disk temp.		-	-	without VRU Rec.
DS1-24	2014/02/04		2014/02/03-04	30	30.00	3.00	0	1.00	1.00	critical ΔT		-	-	without VRU Rec.
DS1-25	2014/02/15		2014/02/14-15	30	15.00	3.00	0	0.50	1.00 0.60	influence to critical point by cooling disk temp.		2.0 2.0	- -	with VRU Rec.
DS1-26	2014/02/17		2014/02/16-17	30	60.00	3.00	0	2.00	0.97	observation of flow		2.0	-	with VRU Rec.
DS1-27	2014/02/18		2014/02/17-18	30	60.00	3.00	0	2.00	0.95	oscillation mode		-	-	with VRU Rec.
DS1-28	2014/02/19		2014/02/18-19	30	15.00	3.00	0	0.50	0.60	influence to oscillation mode by cooling disk temp.		2.0	-	without VRU Rec.
DS1-29	2014/02/20		2014/02/19-20	30	30.00	3.00	0	1.00	1.00	observation of flow		2.0	-	with VRU Rec.
DS1-30	2014/02/24		2014/02/23-24	30	15.00	3.00	0	0.50	1.00	measurement of DSD		from 0 to 16.4	-	with VRU Rec.
DS1-31	2014/02/25		2014/02/24-25	30	60.00	3.00	0	2.00	0.95	oscillation mode		-	-	with VRU Rec.
DS1-32	2014/02/26		2014/02/25-26	30	15.00 60.00	3.00	0	0.50 2.00	0.60 0.99	influence to oscillation mode by cooling disk temp.		-	-	with VRU Rec.
DS1-33	2014/02/27		2014/02/26-27	30	15.00	3.00	-2.847	0.50	0.50	influence to critical point by volume ratio		-	shortliquid by leak from edge	with VRU Rec. without playback



Pic.-1 Coordinate of IR image  
 The Liquid Bridge size on above image: Dia.=30[mm], L=60[mm]