Experimental study of water jet break-up in subcritical and supercritical carbon dioxide

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Table S1. Calculation of the characteristic jet parameter using previous existing methods (WFR **1 mL/min**)

Models		Reitz & Bracco (1986)[1]	Chatwani & Bracco (1985)[2]	Reitz & Bracco (1986)[1]	Reitz & Diwakar (1987)[3]	Reitz (1987)[4]
P	**T**	**L_2**	**L_1 (C=7.15)**	**θ/2**	**θ/2**	**θ/2**
[bar]	**[°C]**	**[µm]**	**[µm]**	**[°]**	**[°]**	**[°]**
50	40	3014	3014	13.807	13.285	14.808
50	60	446	3187	13.083	12.462	14.727
75	40	299	2137	19.118	18.719	18.242
75	60	340	2433	16.932	16.288	17.030
100	40	187	1337	28.985	28.976	26.259
100	60	268	1914	21.150	20.598	19.996
125	40	173	1240	30.850	30.956	27.829
125	60	210	1501	26.259	25.843	24.154
150	40	169	1205	31.579	31.749	28.427
150	60	187	1336	28.994	28.671	26.472

Table S2. Calculation of the characteristic jet parameter using previous existing methods (WFR **5 mL/min**)

Models		Reitz & Bracco (1986)[1]	Chatwani & Bracco (1985)[2]	Reitz & Bracco (1986)[1]	Reitz & Diwakar (1987)[3]	Reitz (1987)[4]
P	**T**	**L_2**	**L_1 (C=7.15)**	**θ/2**	**θ/2**	**θ/2**
[bar]	**[°C]**	**[µm]**	**[µm]**	**[°]**	**[°]**	**[°]**
50	40	447	3194	13.054	13.285	11.300
50	60	466	3333	12.528	12.462	11.038
75	40	324	2314	17.745	18.719	14.950
75	60	360	2575	16.046	16.288	13.867
100	40	208	1487	26.470	28.976	21.962
100	60	288	2058	19.794	20.598	16.801
125	40	194	1387	28.106	30.956	23.293
125	60	229	1635	24.372	25.843	20.491
150	40	189	1351	28.725	31.749	23.787
150	60	205	1464	26.831	28.671	22.502

Table S3. Calculation of the characteristic jet parameter using previous existing methods (WFR **10 mL/min**)

Models		Reitz & Bracco (1986)[1]	Chatwani & Bracco (1985)[2]	Reitz & Bracco (1986)[1]	Reitz & Diwakar (1987)[3]	Reitz (1987)[4]
P	**T**	**L_2**	**L_1 (C=7.15)**	**θ/2**	**θ/2**	**θ/2**
[bar]	**[°C]**	**[μm]**	**[μm]**	**[°]**	**[°]**	**[°]**
50	40	467	3337	12.514	13.285	10.435
50	60	482	3448	12.121	12.462	10.305
75	40	343	2454	16.792	18.719	13.661
75	60	376	2687	15.408	16.288	12.850
100	40	224	1605	24.771	28.976	19.977
100	60	304	2171	18.839	20.598	15.437
125	40	210	1501	26.258	30.956	21.188
125	60	243	1740	23.061	25.843	18.749
150	40	205	1466	26.809	31.749	21.636
150	60	219	1564	25.334	28.671	20.572

Table S4. Calculation of the characteristic jet parameter using previous existing methods (WFR **15 mL/min**)

Models		Reitz & Bracco (1986)[1]	Chatwani & Bracco (1985)[2]	Reitz & Bracco (1986)[1]	Reitz & Diwakar (1987)[3]	Reitz (1987)[4]
P	**T**	**L_2**	**L_1 (C=7.15)**	**θ/2**	**θ/2**	**θ/2**
[bar]	**[°C]**	**[μm]**	**[μm]**	**[°]**	**[°]**	**[°]**
50	40	482	3449	12.121	13.285	9.898
50	60	495	3539	11.819	12.462	9.840
75	40	359	2564	16.114	18.719	12.887
75	60	388	2776	14.940	16.288	12.205
100	40	237	1697	23.582	28.976	18.843
100	60	316	2259	18.151	20.598	14.597
125	40	222	1591	24.968	30.956	19.997
125	60	255	1822	22.125	25.843	17.705
150	40	217	1555	25.473	31.749	20.425
150	60	230	1643	24.268	28.671	19.426

(1) Reitz, R. D.; Bracco, F., Mechanism of breakup of round liquid jets. In *Encyclopedia of fluid mechanics*, Cheremisnoff, N., Ed. Gulf Publishing: Houston, Texas, 1986; pp 223-249.

(2) Chatwani, A.; Bracco, F., Computation of dense spray jets. In *Proceedings of the 3rd International Conference on Liquid Atomisation and Spray Systems*, London, England, 8-10 July, 1985.

(3) Reitz, R. D.; Diwakar, R., Structure of high-pressure fuel sprays. *SAE transactions* **1987**, 96, 492.

(4) Reitz, R., Modeling atomization processes in high-pressure vaporizing sprays. In *Atomisation and Spray Technology*, 1987; Vol. 3, pp 309-337.