Supplementary Material (ESI) for PCCP

Monomer, clusters, liquid: An integrated spectroscopic study of methanol condensation

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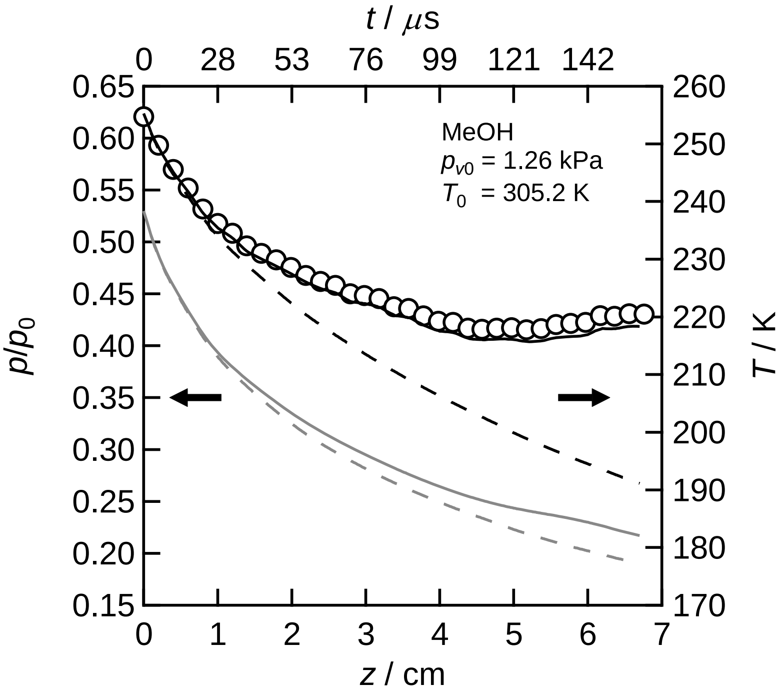

FIG. S1: The measured pressure ratios and temperatures for the condensing flow of a dilute MeOH mixture where p_{v0} = 1.26 kPa. The upper axis gives the flow time corresponding to the values of z on the lower axis, where z = t = 0 corresponds to the throat. The expansion started from p_0 = 59.6 kPa and the other experimental conditions are noted in each figure. The solid gray line is the measured pressure ratios p/p_0, while the dashed gray line is the pressure ratio expected for an isentropic expansion of the gas mixture in the absence of vapor phase association. The open circles, black dashed line, and black solid line, represent T_{TDLAS}, the expected temperature for an isentropic expansion of the gas (no clustering), and the centerline temperature T, respectively. T was calculated as described in Sec. IID.

Table S1. A summary of the SAXS experimental results for p_{v0} = 0.87, 1.26, and 2.09 kPa.

z / cm	<r> / nm	σ / nm	N / cm^{-3}
p_{v0} = 0.87 kPa			
2005			
5.4	4.2	1.5	9.00×10^{11}
5.6	4.8	1.6	1.02×10^{12}
5.8	5.2	1.7	1.27×10^{12}
6	5.9	1.8	1.28×10^{12}
6.2	6.4	1.8	1.33×10^{12}
6.4	6.9	1.8	1.22×10^{12}
6.6	7.2	1.9	1.27×10^{12}
6.8	7.5	1.9	1.18×10^{12}
7	7.7	2.0	1.22×10^{12}
2007			
5.5	4.2	1.7	1.10×10^{12}
6	5.9	1.9	1.26×10^{12}
6.5	7.2	1.9	1.12×10^{12}
7	7.9	1.9	1.00×10^{12}
p_{v0} = 1.26 kPa			
2005			
4.8	5.4	1.9	4.20×10^{11}
5	5.7	2.1	6.82×10^{11}
5.2	6.7	2.1	6.91×10^{11}
5.4	7.2	2.2	8.79×10^{11}
5.6	7.9	2.3	9.32×10^{11}
5.8	8.6	2.3	8.94×10^{11}
6	9.2	2.3	8.47×10^{11}
6.2	9.5	2.3	8.45×10^{11}
6.4	9.8	2.4	8.29×10^{11}
6.6	10.1	2.4	8.03×10^{11}
6.8	10.2	2.5	7.83×10^{11}
7	10.4	2.5	7.76×10^{11}
2007			
4.7	3.7	2.0	5.38×10^{11}

5	5.0	2.2	7.61×10^{11}
6	8.9	2.5	8.12×10^{11}

z / cm	<r> / nm	σ / nm	N / cm^{-3}
7	10.3	2.7	7.26×10^{11}
p_{v0} = 2.09 kPa			
2005			
4.5	6.7	2.7	3.55×10^{11}
5	9.5	3.0	4.66×10^{11}
5.5	11.8	3.1	4.71×10^{11}
6	13.1	3.2	4.49×10^{11}
6.5	13.7	3.2	4.30×10^{11}
7	14.1	3.3	4.07×10^{11}
2007			
4.2	4.5	2.7	2.31×10^{11}
4.5	5.4	2.8	3.40×10^{11}
4.8	6.8	3.1	3.91×10^{11}
5	8.8	3.4	4.62×10^{11}
6	13.2	3.4	4.33×10^{11}
7	14.4	3.6	3.88×10^{11}