

The temperature dependence measurements of the density at 0.1 MPa for 1-alkyl-3-methylimidazolium based ionic liquids with the trifluoromethanesulfonate and tetrafluoroborate anion

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Table S1: Literature sources for experimental density data for the ionic liquids of interest with the sample water content given as water mass fraction, w

author(s)	year	temp range T/K	100 w	methods	no. of data
1-ethyl-3-methylimidazolium trifluoromethanesulfonate [EMIM][CF₃SO₃]					
Rodríguez and Brennecke ¹	2006	278.15–348.15	0.0980	vtd	8
Vercher et al. ²	2007	278.15–338.15	0.0500	vtd	7
García-Miaja et al. ³	2008	293.15–318.15	0.1300	vtd	6
Gardas et al. ⁴	2008	293.15–393.15	0.0021	vtd	7
Wong et al. ⁵	2008	303.2–323.2	n/a	vtd	5
This work	2010	268.45–355.90	0.0105	hbd	18
1-butyl-3-methylimidazolium trifluoromethanesulfonate [BMIM][CF₃SO₃]					
Fredlake et al. ⁶	2004	295.75–342.95	0.2800	pyc	5
Tokuda et al. ⁷	2006	288.1–313.1	0.0040	vtd	6
Gardas et al. ⁸	2007	293.15–393.15	0.0018	vtd	11
García-Miaja et al. ³	2008	293.15–318.15	0.1300	vtd	6
Ge et al. ⁹	2008	303.15–343.15	n/a	pyc	7
Tariq et al. ¹⁰	2009	293.15–333.15	0.0070	vtd	4
Soriano et al. ¹¹	2009	298.2–353.2	n/a	vtd	17
This work (Merck)	2010	293.37–355.84	0.0028	hbd	13
This work (Solvionic)	2010	292.93–355.78	0.0028	hbd	13
This work (Solvionic)	2010	293.72–352.70	0.8750	hbd	8
1-hexyl-3-methylimidazolium trifluoromethanesulfonate [HMIM][CF₃SO₃]					
This work	2010	293.95–355.39	0.0098	hdb	13
1-hexyl-3-methylimidazolium tetrafluoroborate [HMIM][BF₄]					
Letcher and Reddy ¹²	2004	298.15	n/a	vtd	1
Wagner et al. ¹³	2004	298	n/a	pyc	1
Wagner et al. ¹⁴	2004	318.15	n/a	pyc	1
Letcher and Reddy ¹⁵	2005	298.15	n/a	vtd	1
Sanmamed et al. ¹⁶	2007	288.15–323.15	0.1709	vtd	36
Navia et al. ¹⁷	2007	298.15–308.15	n/a	vtd	18
Muhammad et al. ¹⁸	2008	298.15–358.15	0.0324	vtd	7
García-Miaja et al. ¹⁹	2009	293.15–318.15	0.0013	vtd	6
Taguchi et al. ²⁰	2009	293.15–353.15	0.0230	vtd	4
Rilo et al. ²¹	2009	298.15	0.0273	vtd	1
Klomfar et al. ²²	2009	283.61–352.77	0.0157	hbd	7
Sanmamed et al. ²⁵	2010	283.15–323.15	0.0600	vtd	9
Safarov and Hassel ²⁶	2010	283.15–373.15	n/a	vtd	7
This work	2010	268.65–356.07	0.0051	hbd	18

vtd: vibrating tube densitometer; pyc: pycnometer; hdb: hydrostatic-balance densitometer

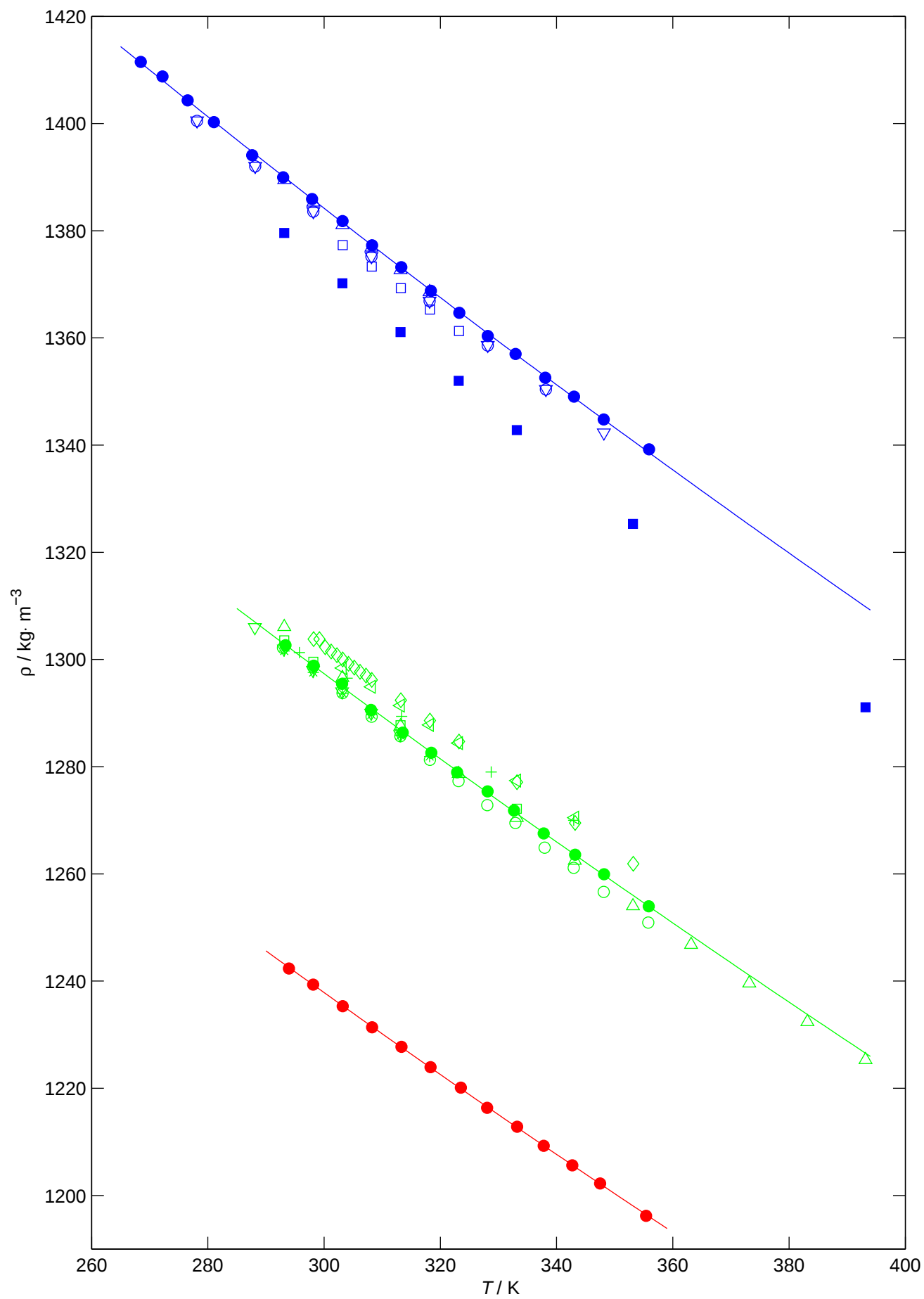


Figure S1: Temperature dependence of the density of the 1-C_n-3-methylimidazolium trifluoromethanesulfonates for n=2, 4, and 6. Comparison of the experimental density data obtained by different authors, including the present ones.

[EMIM] [CF₃SO₃]: ▽, Rodríguez and Brennecke;¹ ○, Vercher et al.;² △, García-Miaja et al.;³ ■, Gardas et al.;⁴ □, Wong et al.;⁵ ●, this work;

[BMIM] [CF₃SO₃]: +, Fredlake et al.;⁶ ▽, Tokuda et al.;⁷ △, Gardas et al.;⁸ *, García-Miaja et al.;³ ◁, Ge et al.;⁹ □, Tariq et al.;¹⁰ ◇, Soriano et al.;¹¹ ●, this work (the sample supplied by Merck KGaA); ○, this work (the sample supplied by Solvionic SA);

[HMIM] [CF₃SO₃]: ●, this work.

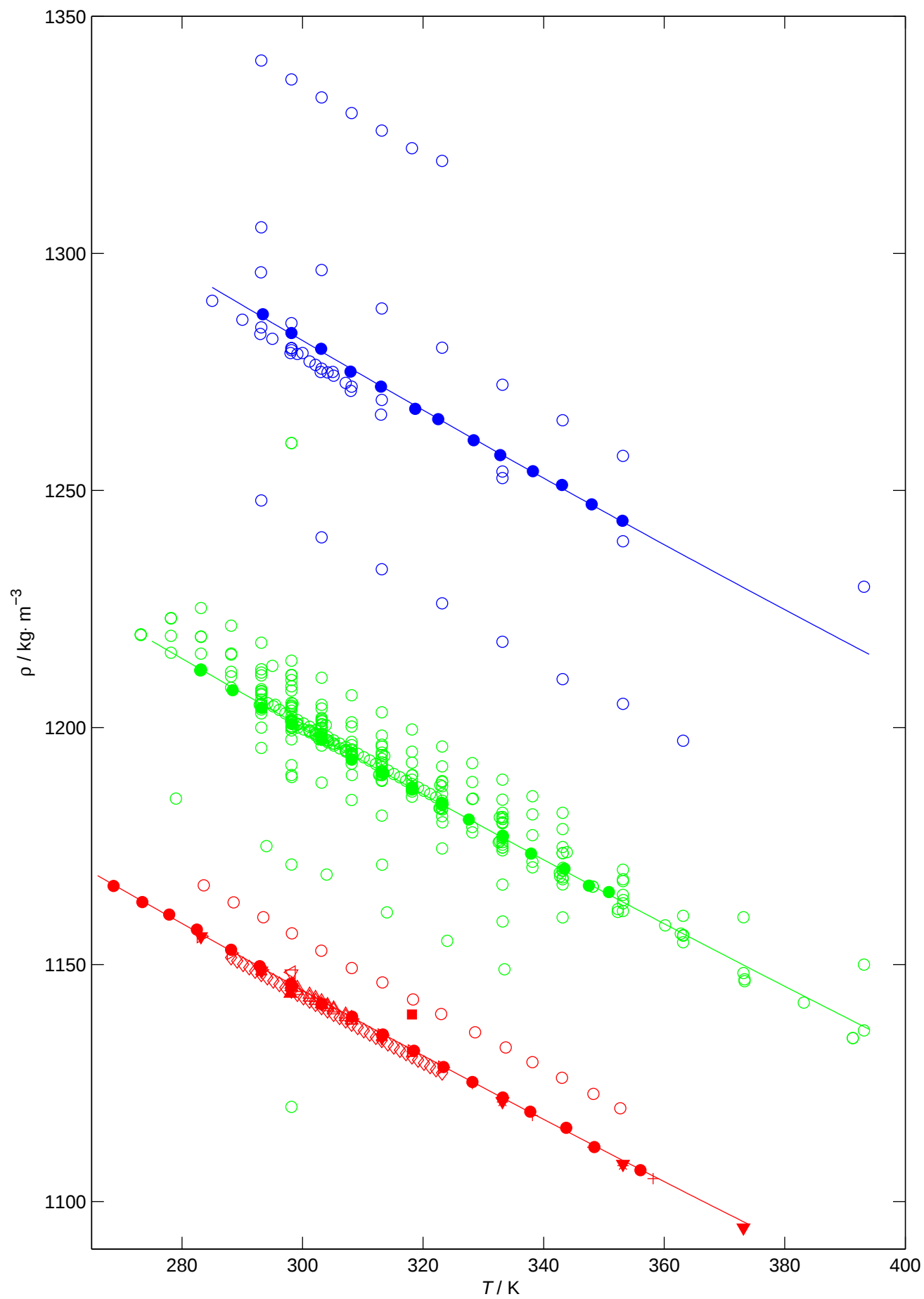


Figure S2: Temperature dependence of the density of the 1-C_n-3-methylimidazolium tetrafluoroborates for n=2, 4, and 6. Comparison of the experimental density data obtained by different authors, including the present one.

[EMIM][BF₄]: ●, Klomfar et al.;²² ○, others authors;

[BMIM][BF₄]: ●, Klomfar et al.;²² ○, others authors;

[HMIM][BF₄]: ◁, Letcher and Reddy;¹² ■, Wagner et al.;¹³ ▲, Wagner et al.;¹⁴ ▽, Letcher and Reddy;¹⁵ ◇, Sanmamed et al.;¹⁶ △, Navia et al.;¹⁷ +, Muhammad et al.;¹⁸ □, García-Miaja et al.;¹⁹ *, Taguchi et al.;²⁰ ◆, Rilo et al.;²¹ ○, Klomfar et al.;²² ▷, Sanmamed et al.;²⁵ ▼, Safarov and Hassel.;²⁶ ●, **this work**;