

## Electronic Supplementary Information

# Effects of the long octyl chain on complex formation of nickel(II) with dimethyl sulfoxide, methanol, and acetonitrile in ionic liquid of [C<sub>8</sub>mim][TFSA]

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Table S1 Overall stability constants,  $\log(\beta_n \text{ mol}^{-n} \text{ dm}^{3n})$  of  $[\text{Ni}(\text{dms})_n]$ ,  $[\text{Ni}(\text{meoh})_n]$ , and  $[\text{Ni}(\text{an})_n]$  in  $[\text{C}_8\text{mim}][\text{TFSA}]$  and  $[\text{C}_2\text{mim}][\text{TFSA}]$  solutions at 30.0, 35.0, 40.0, and 45.0 °C.<sup>a</sup>

	[C <sub>8</sub> mim][TFSA]			[C <sub>2</sub> mim][TFSA]
	[Ni(dms) <sub>n</sub> ] [Ni <sup>2+</sup> ] = 0.0500 M <sup>b</sup>	[Ni(meoh) <sub>n</sub> ] [Ni <sup>2+</sup> ] = 0.0500 M	[Ni(an) <sub>n</sub> ] [Ni <sup>2+</sup> ] = 0.0500 M	[Ni(dms) <sub>n</sub> ] [Ni <sup>2+</sup> ] = 0.0660 M
30.0 °C				
logβ <sub>1</sub>	4.79(13)			
logβ <sub>2</sub>	9.38(25)	4.66(6)	7.09(9)	9.31(78)
logβ <sub>4</sub>	14.96(27)	9.69(12)	13.69(17)	18.59(1.57)
logβ <sub>6</sub>	18.24(29)	14.28(16)	19.01(26)	26.68(2.35)
35.0 °C				
logβ <sub>1</sub>	4.52(10)			
logβ <sub>2</sub>	8.46(17)	4.50(6)	6.82(7)	8.99(69)
logβ <sub>4</sub>	13.76(20)	9.36(11)	13.14(14)	18.02(1.38)
logβ <sub>6</sub>	16.92(23)	13.85(15)	18.20(21)	25.92(2.08)
40.0 °C				
logβ <sub>1</sub>	4.30(9)			
logβ <sub>2</sub>	8.11(15)	4.35(5)	6.52(6)	8.49(48)
logβ <sub>4</sub>	13.31(19)	8.96(10)	12.57(12)	17.07(97)
logβ <sub>6</sub>	16.42(22)	13.34(13)	17.42(17)	24.56(1.45)
45.0 °C				
logβ <sub>1</sub>	3.73(5)			
logβ <sub>2</sub>	6.96(9)	4.16(5)	6.46(6)	8.09(34)
logβ <sub>4</sub>	12.08(14)	8.55(9)	12.45(12)	16.24(67)
logβ <sub>6</sub>	15.02(18)	12.79(11)	17.28(18)	23.40(1.02)

<sup>a</sup>Values in parentheses are standard deviations. <sup>b</sup>M ≡ mol dm<sup>-3</sup>.