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The Influence of Salinity on the Removal of Ni and Zn by Sorption onto Iron Oxide- and Manganese Oxide-Coated Sand

Supplementary Material

Table S1. The chemical compositions of artificial seawater (30‰).

Ingredient	Concentration (g L^{-1})
NaCl	24.72
KCl	0.67
$CaCl_2 \cdot 2H_2O$	1.36
$MgCl_2$	2.18
$MgSO_4$	3.07
$NaHCO_3$	0.18

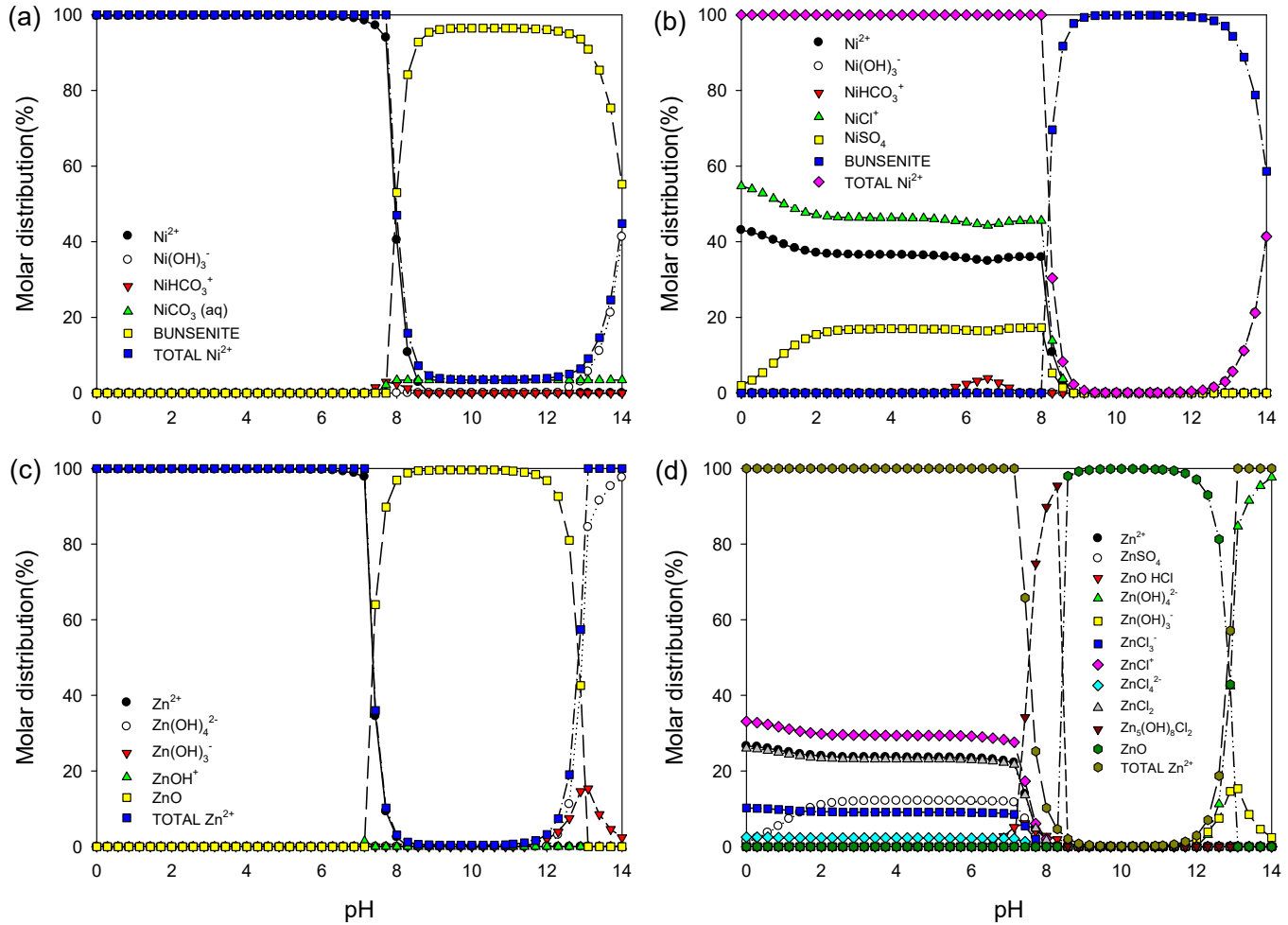

Figure S1. Total concentration (%) of Ni^{2+} at **(a)** 0‰ and **(b)** 30‰ salinity and Zn^{2+} at **(c)** 0‰, and **(d)** 30‰ salinity as a function of pH predicted by MINEQL+ for Windows (version 4.6, Environmental Research Software, Edgewater, MD, USA). A 0.02 mM Ni^{2+} or Zn^{2+} solution was used for the prediction.

Table S2. Sorption capacities of various heavy metal onto IOCS and MOCS in water.

No.	Heavy metals	Sorption capacity (mmol kg^{-1})		Sorbent preparation method	References
		IOCS	MOCS		
1	As (III)	1.255	-	Wet chemical reaction coating and drying at 105 °C.	[1]
2	As (V)	2.202	0.801	Wet chemical reaction coating and drying at 105 °C.	[1]
		1.001	-	Wet chemical reaction coating and drying at 110 °C.	[2]
3	Cu (II)	32.11	-	Natural IOCS without pretreatment.	[3]
		2.581	-	Wet chemical reaction coating and drying at 105 °C.	[4]
4	Cr (VI)	-	4.371	Wet chemical reaction coating and drying at 160 °C.	[5]
5	Ni (II)	17.04	-	Natural IOCS (Tunisia) without pretreatment.	[3]
		46.52	56.72	Wet chemical reaction coating (virgin sand) and drying at 105 °C.	[6]
		2.7	6.3	Wet chemical reaction coating and drying at 65 °C	This study
6	Zn	7.9	11.8	Wet chemical reaction coating and drying at 60 °C	This study

Note: IOCS—iron oxide-coated sand; MOCS—manganese oxide-coated sand.

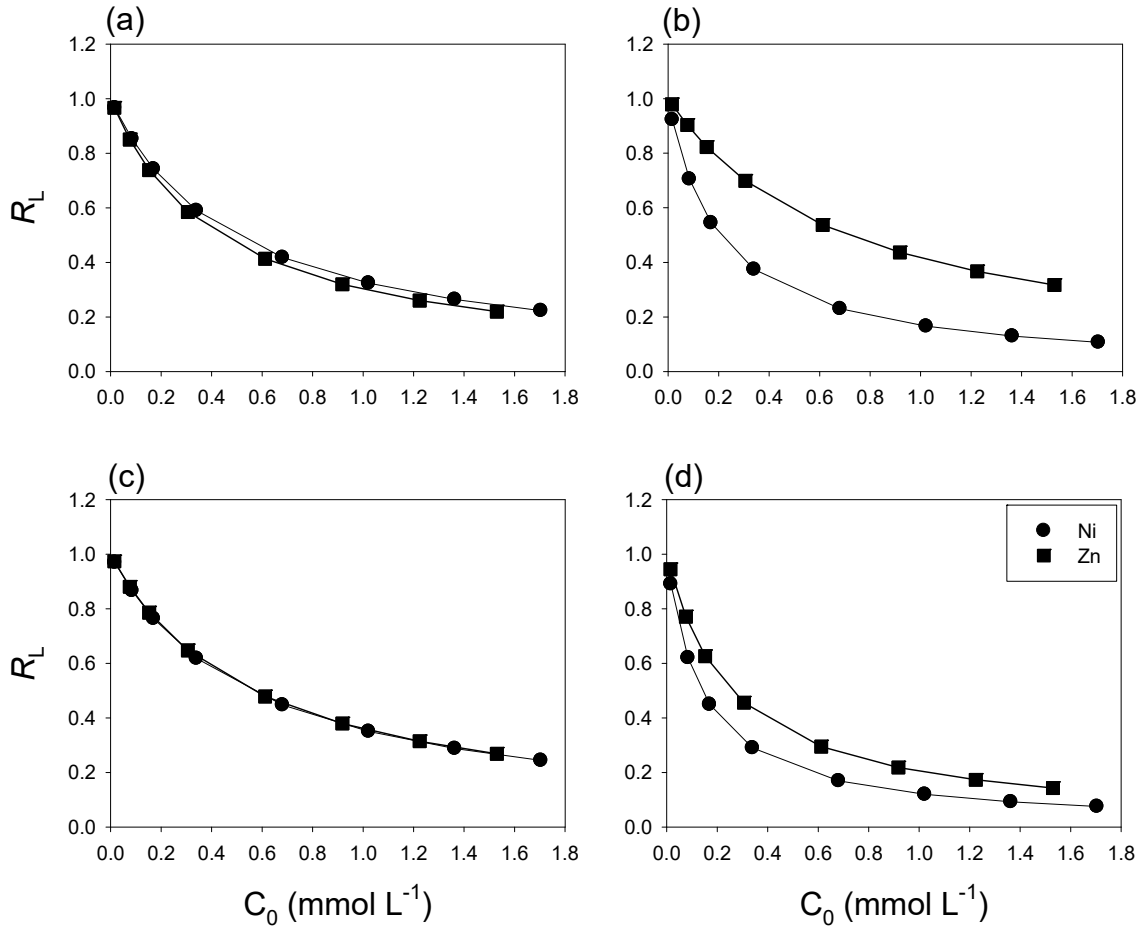

Figure S2. R_L value calculations of Langmuir isotherm for single sorption of Ni and Zn onto iron oxide-coated sand (IOCS) at **(a)** 0‰ and **(b)** 30‰ salinity and onto manganese oxide-coated sand (MOCS) at **(c)** 0‰ and **(b)** 30‰ salinity.

References

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