Neodymium

Equilibrium reactions	lg*K* at infinite dilution and *T* = 298 K			
	Baes and Mesmer, 1976	NIST46	Neck et al., 2009	Brown and Ekberg, 2016
$Nd^{3+} + H_2O \rightleftharpoons Nd(OH)^{2+} + H^+$	–8.0	–8.0	–7.4 ± 0.4	–8.13 ± 0.05
$Nd^{3+} + 2\ H_2O \rightleftharpoons Nd(OH)_2^{+} + 2\ H^+$	(–16.9)		–15.7 ± 0.7	
$Nd^{3+} + 3\ H_2O \rightleftharpoons Nd(OH)_{3(aq)} + 3\ H^+$	(–26.5)		–26.2 ± 0.5	
$Nd^{3+} + 4\ H_2O \rightleftharpoons Nd(OH)_4^{-} + 4\ H^+$	(–37.1)	–37.4	–40.7 ± 0.7	
$2\ Nd^{3+} + 2\ H_2O \rightleftharpoons Nd_2(OH)_2^{4+} + 2\ H^+$	–13.86	–13.9		–15.56 ± 0.20
$3\ Nd^{3+} + 5\ H_2O \rightleftharpoons Nd_3(OH)_5^{4+} + 5\ H^+$	< –28.5			–34.2 ± 0.3
$Nd(OH)_3(s) + 3\ H^+ \rightleftharpoons Nd^{3+} + 3\ H_2O$	18.6		17.2 ± 0.4	17.89 ± 0.09
$Nd(OH)_3(s) \rightleftharpoons Nd^{3+} + 3\ OH^-$		–23.2 ± 0.9	–21.5 (act) –23.1(inact)	

C.F. Baes and R.E. Mesmer, The Hydrolysis of Cations. Wiley, New York, 1976, p. 137.

P.L. Brown and C. Ekberg, Hydrolysis of Metal Ions. Wiley, 2016, pp. 135-145.

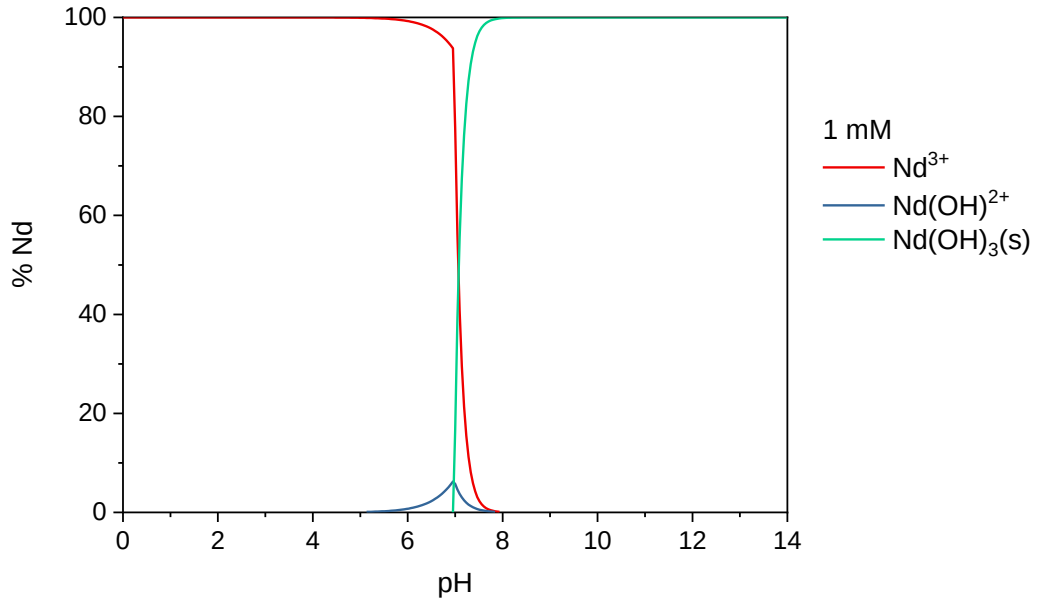
V. Neck, M. Altmaier, T. Rabung, J. Lützenkirchen and T. Fanghänel, Thermodynamics of trivalent actinides and neodymium in NaCl, $MgCl_2$, and $CaCl_2$ solutions: Solubility, hydrolysis, and ternary Ca-M(III)-OH complexes. Pure Appl. Chem., 81, 1555–1568 (2009).

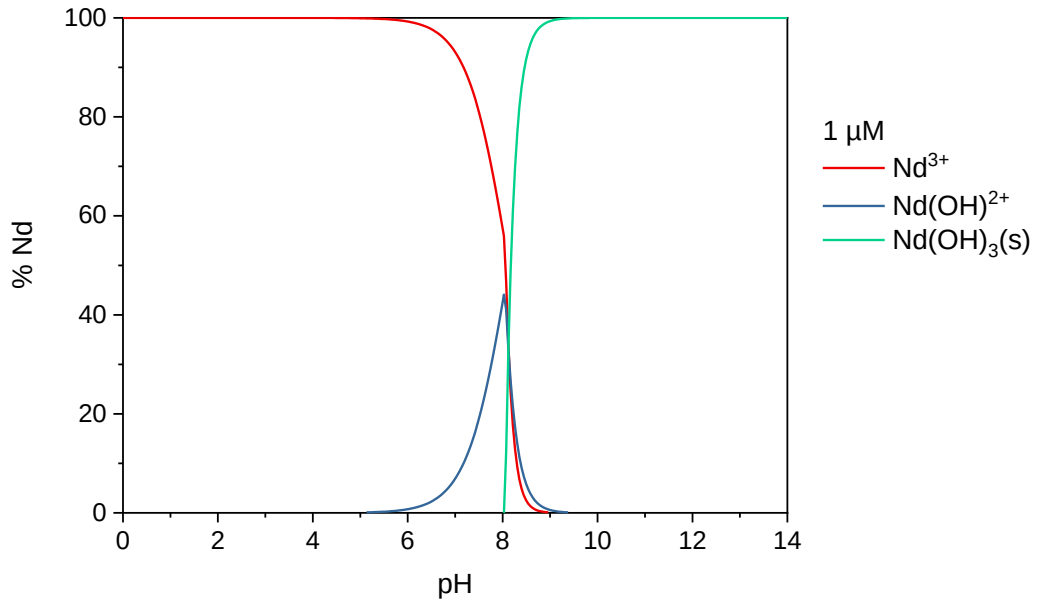
NIST46, NIST Critically Selected Stability Constants of Metal Complexes: Version 8.0. Available at: www.nist.gov/srd/nist46

Contributors: Clemente Bretti, Elvira Bura Nakić, Montserrat Filella, Josep Galceran, Sofia Gama, Elżbieta Gumienna- Kontecka, Lucija Knežević, Gabriele Lando, Přemysl Lubal, Demetrio Milea, Andrzej Mular, Bartosz Orzeł, Michaela Rendošová, Matteo Savastano, Vladimir Sladkov, Kamila Stokowa-Sołtys, Yuliya Toporivska, Zuzana Vargová, Emanuele Zanda, Veronika Zinovyeva

Distribution diagrams

These diagrams have been computed at two Nd concentrations (1 mM = $1x10^{-3}$ mol L^{-1} and 1 µM = $1x10^{-6}$ mol L^{-1}) with the 'best' equilibrium constants above (in green). Calculations assume T = 298 K for the limiting case of zero ionic strength (*i.e.*, even neglecting plotted ions).





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