Titanium(IV)

Equilibrium reactions	lg*K* at infinite dilution and *T* = 298 K	
	Baes and Mesmer, 1976	Brown and Ekberg, 2016
$Ti(OH)_2^{2+} + H_2O \rightleftharpoons Ti(OH)_3^{+} + H^{+}$	⩽–2.3	
$Ti(OH)_2^{2+} + 2\ H_2O \rightleftharpoons Ti(OH)_4 + 2\ H^{+}$	–4.8	
$TiO^{2+} + H_2O \rightleftharpoons TiOOH^{+} + H^{+}$		–2.48 ± 0.10
$TiO^{2+} + 2\ H_2O \rightleftharpoons TiO(OH)_2 + 2\ H^{+}$		–5.49 ± 0.14
$TiO^{2+} + 3\ H_2O \rightleftharpoons TiO(OH)_3^{-} + 3\ H^{+}$		–17.4 ± 0.5
$TiO(OH)_2 + H_2O \rightleftharpoons TiO(OH)_3^{-} + H^{+}$		–11.9 ±0.5
$TiO_2(c) + 2\ H_2O \rightleftharpoons Ti(OH)_4$	~ –4.8	
$TiO_2(s) + H^{+} \rightleftharpoons TiOOH^{+}$		–6.06 ± 0.30
$TiO_2(s) + H_2O \rightleftharpoons TiO(OH)_2$		–9.02 ± 0.02
$TiO_2(s) + 4\ H^{+} \rightleftharpoons Ti^{4+} + 2\ H_2O$		–3.56 ± 0.10

C.F. Baes and R.E. Mesmer, The Hydrolysis of Cations. Wiley, New York, 1976, p. 151.

P.L. Brown and C. Ekberg, Hydrolysis of Metal Ions. Wiley, 2016, pp. 433–442.

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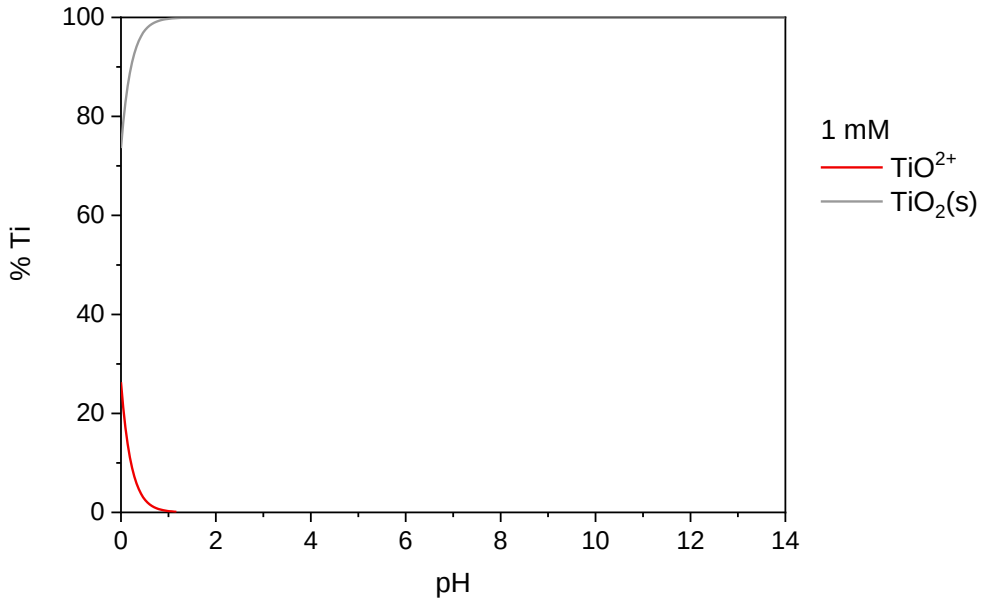
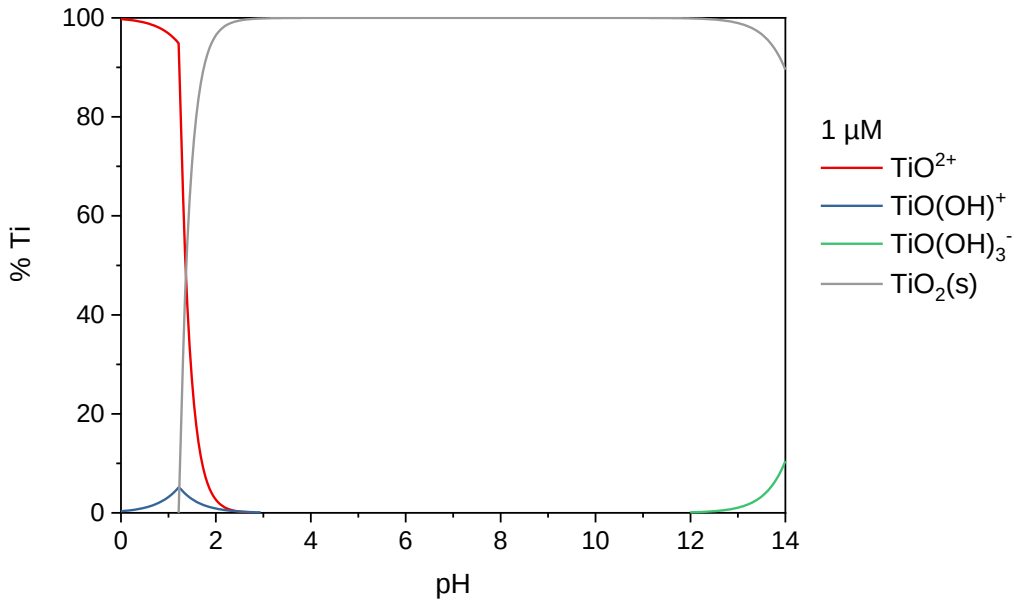
Distribution diagrams

These diagrams have been computed at two Ti(IV) 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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