Uranium(IV)

Equilibrium reactions	lg*K* at infinite dilution and *T* = 298 K			
	Baes and Mesmer, 1976	Thoenen et al., 2014	Brown and Ekberg, 2016	Grenthe et al., 2020
$U^{4+} + H_2O \rightleftharpoons UOH^{3+} + H^+$	–0.65	– 0.54 ± 0.06	–0.58 ± 0.08	–0.54 ± 0.06
$U^{4+} + 2\ H_2O \rightleftharpoons U(OH)_2^{2+} + 2\ H^+$	(–2.6)	–1.1 ± 1.0	–1.4 ± 0.2	–1.9 ± 0.2
$U^{4+} + 3\ H_2O \rightleftharpoons U(OH)_3^{+} + 3\ H^+$	(–5.8)	–4.7 ± 1.0	–5.1 ± 0.3	–5.2 ± 0.4
$U^{4+} + 4\ H_2O \rightleftharpoons U(OH)_4 + 4\ H^+$	(–10.3)	–10.0 ± 1.4	–10.4 ± 0.5	–10.0 ± 1.4
$U^{4+} + 5\ H_2O \rightleftharpoons U(OH)_5^{-} + 5\ H^+$	–16.0			
UO_2(am, hyd) + $4\ H^+ \rightleftharpoons U^{4+} + 2\ H_2O$		1.5 ± 1.0		
UO_2(am,hyd) + $2\ H_2O \rightleftharpoons U^{4+} + 4\ OH^-$			–54.500 ± 1.000	-54.500 ± 1.000
UO_2(c) + $4\ H^+ \rightleftharpoons U^{4+} + 2\ H_2O$	–1.8			
UO_2(c) + $2\ H_2O \rightleftharpoons U^{4+} + 4\ OH^-$				–60.860 ± 1.000

C.F. Baes and R.E. Mesmer, The Hydrolysis of Cations. Wiley, New York, 1976, p. 181.

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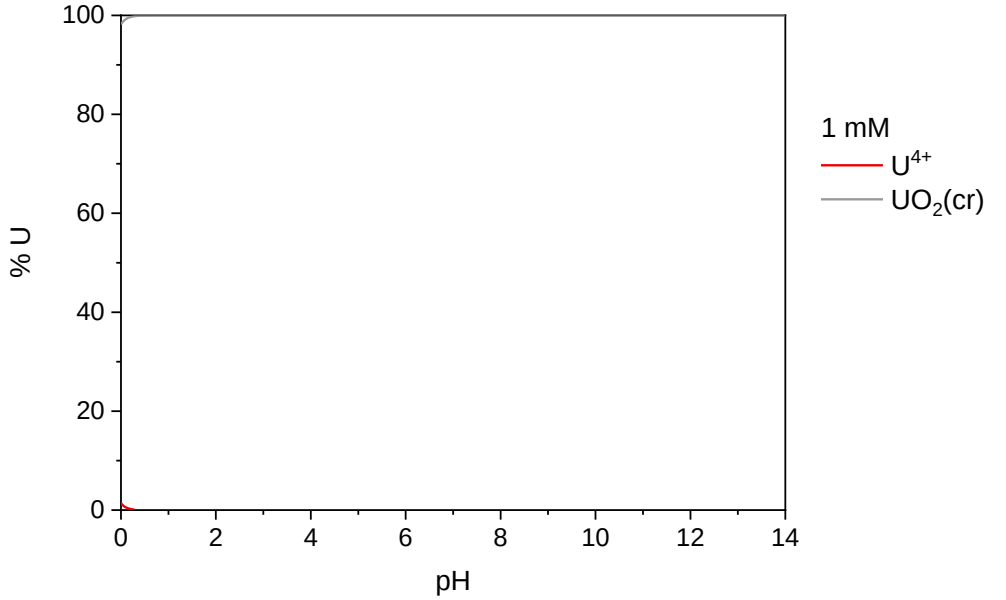
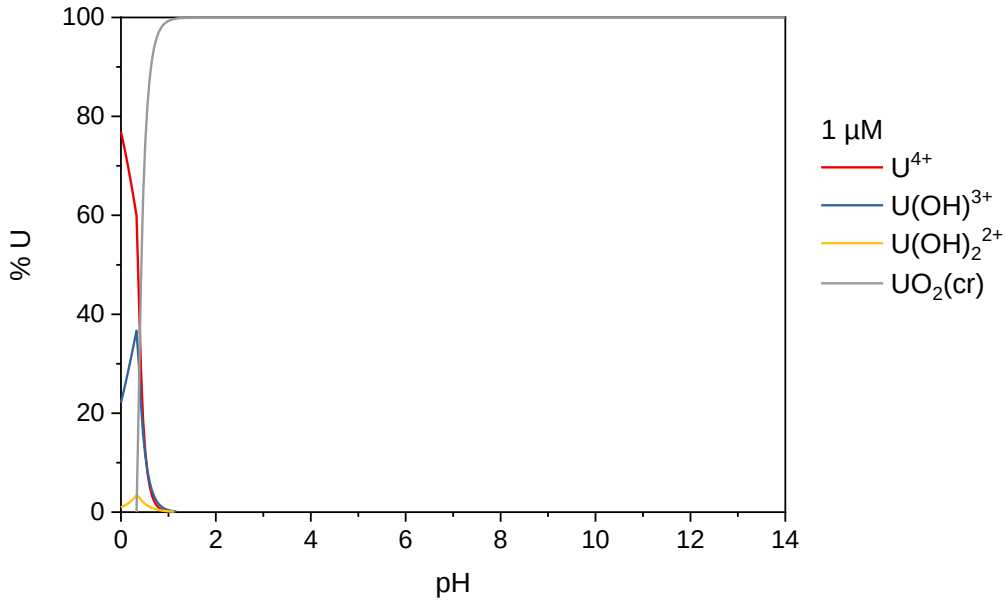
Distribution diagrams

These diagrams have been computed at two U(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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