Hydrolysis Constants for Metal Cations

Electronegativity < 1.5				Electronegativity > 1.5				
Ion	Radius	(a)	pK_a	Ion	Radius	(a)	(b)	pK_a
+1 Ions								
K	152	0.007	14.5	Tl	164	0.006	0.016	13.2
Na	116	0.009	14.2	Ag	129	0.008	0.049	12.0
Li	90	0.011	13.6					
+2 Ions								
Ba	149	0.027	13.5					
Sr	132	0.030	13.3	Pb	133	0.030	0.066	7.7
				Sn				3.4
Ca	114	0.035	12.8	Hg	116	0.034	0.082	3.4
				Cd	109	0.037	0.055	10.1
				Cr	94	0.043	0.043	10.0
				Mn	97	0.041	0.046	10.6
				Fe	92	0.043	0.075	9.5
				Co	88	0.045	0.082	9.6
				Ni	83	0.048	0.088	9.9
Mg	86	0.047	11.4	Zn	88	0.045	0.060	9.0
				Be	59	0.068	0.074	6.2
+3 Ions								
Pu	114	0.079	7.0					
La	117	0.077	8.5	Bi	117	0.077	0.127	1.1
Lu	100	0.090	7.6	Tl	102	0.088	0.140	0.6
Y	104	0.086	7.7	Au	99	0.091	0.191	−1.5
Sc	88	0.102	4.3	In	94	0.096	0.123	4.0
				Ti	81	0.111	0.115	2.2
				Ga	76	0.118	0.148	2.6
				Fe	78	0.115	0.147	2.2
				Cr	75	0.120	0.135	4.0
				Al	67	0.134	0.145	5.0
+4 Ions								
Th	108	0.148	3.2					
Pa	104	0.154	0.8					
U	103	0.155	0.6					
Np	101	0.158	1.5					
Pu	100	0.160	0.5					
Ce	101	0.158	1.1					
Hf	85	0.188	0.2	Sn	83	0.193	0.222	−0.6
Zr	86	0.186	−0.3	Ti	74	0.216	0.220	−4.0

Sources: Values of hydrolysis constants (pK_a) taken from C. F. Baes and R. E. Mesmer, *The Hydrolysis of Cations*, Wiley-Interscience, New York, 1976; and when not available there from J. Burgess, *Metal Ions in Solution*, Ellis Horwood, Chichester, England, 1978, pp. 264–267.

Note: (a) Z^2/r ratio for the cation; (b) $Z^2/r - 0.096(\chi_p - 1.50)$ for the cation.

Table copied from Wulfsberg,G. *Principles of Descriptive Chemistry*; Brooks/Cole Publishing:Monterey CA, 1987; p.25.