Hydrolysis of Metal Complexes can give acidic solutions

\[ pK_a \text{ for } [M(H_2O)_6]^{n+} \]
- \[ [Fe(H_2O)_6]^{3+} \] 2.46
- \[ [Cr(H_2O)_6]^{3+} \] 3.89
- \[ [Al(H_2O)_6]^{3+} \] 4.85
- \[ [Fe(H_2O)_6]^{2+} \] 5.89
- \[ [Cu(H_2O)_6]^{3+} \] 7.49
- \[ [Ni(H_2O)_6]^{2+} \] 9.03

Oxo Acids - Trends

For this important class of aqueous acids, rules exist for correlating and understanding trends in acidities:

Pauling's Rules for \( O_x E(OH)_q \) acids:
- (1) \( pK_a \approx 8 - 5q \)
- (2) if \( q > 1 \), then successive \( pK_a \) values should increase by about 5
Trends for dicarboxylic acids

As the positions of deprotonation get further apart, the influence that the two sites exert on each other declines.