Standard State Thermodynamic Properties of $Ba^{2+}(aq)$, $Co^{2+}(aq)$ and $Cu^{2+}(aq)$ up to 598.15 K, and Temperature Effect on Ligand Field

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Integral heat of solution measurements [1] of barium chloride to 619.81 K, copper oxide in an excess of perrhenic acid to 585 K and cobalt perrhenate in perrhenic acid to 573 K were measured in a high dilution calorimeter ($\leq 10^{-3}$ *m*) at p_{sat}, from which the high temperature thermodynamic properties of aqueous barium chloride, copper perrhenate and cobalt perrhenate were obtained. From the known differences between the corresponding properties for aqueous perrhenate and chloride ions [2, 3], the thermodynamic properties of completely ionized aqueous copper and cobalt chloride were obtained from ionic additivity. The enthalpy and derived heat capacity data at higher temperatures (T > 473.15 K) suggest that the ligand field stabilization energy of $Co^{2+}(aq)$ may be disappearing.

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2. Djamali, E. and Cobble J. W. (2008) *Phys. Chem. Chem. Phys.* **2008**, in review.
3. Djamali, E. and Cobble J. W. (2008) *Phys. Chem. Chem. Phys.* **2008,** in review.