

**Untersuchungen an Polyhalogeniden, XXXVII [1].
Heptaiodide(3-) von Amminkomplexen des Chroms und Cobalts:
Hexamminchrom(III)heptaiodid $[\text{Cr}(\text{NH}_3)_6](\text{I}_3)(\text{I}_4)$ und die
Tri- μ -hydroxo-bis[metall(III)-triammin]heptaiodide
 $[(\text{NH}_3)_3\text{M}(\text{OH})_3\text{M}(\text{NH}_3)_3](\text{I}_3)_2\text{I}$ mit $\text{M} = \text{Co}, \text{Cr}$**

Studies of Polyhalides, XXXVII [1]. Heptaiodides(3-) of Ammine Complexes of Chromium and Cobalt: Hexaminechromium(III) heptaiodide $[\text{Cr}(\text{NH}_3)_6](\text{I}_3)(\text{I}_4)$ and the Tri- μ -hydroxo-bis[metal(III)-triammine] heptaiodides $[(\text{NH}_3)_3\text{M}(\text{OH})_3\text{M}(\text{NH}_3)_3](\text{I}_3)_2\text{I}$ with $\text{M} = \text{Co}, \text{Cr}$

Karl-Friedrich Tebbe*, Theo Gilles

Institut für Anorganische Chemie der Universität zu Köln, Greinstraße 6, D-50939 Köln

Z. Naturforsch. **53 b**, 1127–1134 (1998); eingegangen am 18. Juni 1998

Triiodide(1-), Tetraiodide(2-), Heptaiodide(3-), Hexamine and Tri- μ -hydroxo-bis[metal-triammine] Complexes of Chromium and Cobalt, Crystal Structure

The new compounds $[\text{Cr}(\text{NH}_3)_6](\text{I}_3)(\text{I}_4)$ and $[(\text{NH}_3)_3\text{M}(\text{OH})_3\text{M}(\text{NH}_3)_3](\text{I}_3)_2\text{I}$ with $\text{M} = \text{Cr}, \text{Co}$ have been prepared by the reaction of $[\text{M}(\text{NH}_3)_6]\text{X}_3$ ($\text{M} = \text{Cr}, \text{Co}$; $\text{X} = \text{Cl}, \text{I}, \text{NO}_3$), KI , and I_2 in water under controlled stoichiometric and pH conditions. The first compound is isotypic with the cobalt compound of the same composition. It crystallizes in the monoclinic space group $\text{I}2/m$ with $a = 984.7(3)$, $b = 786.6(1)$, $c = 1330.1(3)$ pm, $\beta = 95.34(2)^\circ$ and $Z = 2$ and contains nearly octahedral cations $[\text{Cr}(\text{NH}_3)_6]^{3+}$, a linear triiodide ion I_3^- and a tetraiodide ion I_4^{2-} . The two other compounds are isotypic. They crystallize in the orthorhombic space group Pnma with $a = 2629.6(14) / 2633.5(2)$, $b = 798.3(11) / 797.3(1)$, $c = 1127.6(7) / 1125.7(1)$ pm and $Z = 4$ for Co / Cr respectively. The heptaiodide(3-) ion is broken into two triiodide ions and one iodide ion.

* Sonderdruckanforderungen an Prof. Dr. K.-F. Tebbe; E-mail: tebbe@rrz.uni-koeln.de