Table 1. Characteristic reactions of cations of Group I and Group II.

	Ag^+	Hg_2^{2+}	Pb^{2+}	Hg^{2+}	Bi^{3+}	Cu^{2+}	Cd^{2+}
HCl	↓AgCl white	↓Hg_2Cl_2 white	↓$PbCl_2$ white				
H_2S (+HCl)	↓Ag_2S black	↓Hg_2S black	↓PbS black	↓HgS black	↓Bi_2S_3 brown-black	↓CuS black	↓CdS yellow
NaOH or KOH	↓Ag_2O brown	↓HgO + ↓Hg black	↓$Pb(OH)_2$ white, dissolved in an excess of NaOH → $([Pb(OH)_4]^{2-})$	↓HgO yellow	↓$Bi(OH)_3$ white, after heating ↓BiO(OH) yellow	↓$Cu(OH)_2$ blue, after heating → CuO black	↓$Cd(OH)_2$ white
NH_3 aq	↓Ag_2O brown, dissolved in an excess of NH_3aq → $([Ag(NH_3)_2]OH)$	↓$HgNH_2Cl$ white + black ↓Hg	↓$Pb(OH)_2$ white	↓HgO yellow, (or ↓$Hg(NH_2)Cl$ white, in presence of Cl^- ions)	↓$Bi(OH)_3$ white	↓ $Cu(OH)_2$ blue, dissolved in an excess of NH_3 aq → $[Cu(NH_3)_2]^{2+}$ dark blue	↓$Cd(OH)_2$ white, dissolved in an excess of NH_3aq → $[Cd(NH_3)_2]^{2+}$
KI	↓AgI creamy-yellow	↓Hg_2I_2 yellow-green, dissolved in an excess of KI → ($K_2[HgI_4]$ +↓Hg) black	↓PbI_2 yellow	↓HgI_2 reddish-orange, dissolved in an excess of KI ($K_2[HgI_4]$)	↓BiI_3 brown-black, dissolved in an excess of KI → $[BiI_4]^-$ orange	↓CuI_2 white (+ I_2 brown)	
K_2CrO_4	↓$AgCrO_4$ brown-red	↓Hg_2CrO_4 brown	↓$PbCrO_4$ yellow	↓$HgCrO_4$ orange	↓$(BiO)_2CrO_4$ yellow	↓$CuCrO_4$ brown red	↓$CdCrO_4$ yellow (the reaction does not take place immediately)
$K_4[Fe(CN)_6]$	↓$Ag_4[Fe(CN)_6]$ creamy-white	↓$Hg_4[Fe(CN)_6]$ darkening white	↓$Pb_2[Fe(CN)_6]$ creamy-white	↓$Hg_2[Fe(CN)_6]$ darkening white	↓$Bi_4[Fe(CN)_6]_3$ yellow-green	↓$Cu_2[Fe(CN)_6]$ brown red	↓$Cd_2[Fe(CN)_6]$ creamy
Other	+KBr → AgBr greenish	+$SnCl_2$ → ↓Hg_2Cl_2 white; in an excess of Sn^{2+} → ↓Hg black	+ H_2SO_4 (1M)→ ↓$PbSO_4$ white	+$SnCl_2$ → ↓Hg_2Cl_2 white; in an excess of Sn^{2+} → ↓Hg black	$2Bi(OH)_3$ + $3[Sn(OH)_4]^{2-}$ → $3[Sn(OH)_6]^{2-}$ + ↓2Bi black		