ジアミン配位子を用いた銀(I)単核および二核錯体の合成

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Synthesis of mono- and di-nuclear silver(I) complexes with diamine ligand ([1]*Graduate School of Intergrated Basic Sciences, Nihon University*, [2]*College of Humanities & Sciences, Nihon University*) ○Hizashi Miyauchi[1], Toshiharu Ishizaki[2], Kenji Ohashi[2], Tomoji Ozeki[2]

Mononuclear Ag(I) complexes $[Ag(tmeda)_2]X$ (tmeda = *N*,*N*,*N*',*N*'-tetramethylethylenediamine; X = $CF_3SO_3^-$, BF_4^- or NO_3^-; Figure 1a) have been successfully synthesized and analyzed by single crystal X-ray diffraction. Since Ag(I) ion is easily reduced by light at room temperatures, each compound was synthesized in the dark and at -20 °C. Furthermore, the dinuclear complexes $[Ag_2(\mu\text{-tmeda})_2](CF_3SO_3)_2$ and $[Ag_2(\mu\text{-tmeda})_2](NO_3)_2\cdot C_2H_5OH$ were also synthesized by decreasing the ratio of the tmeda ligand (Figure 1b and c). Structural analyses of the dinuclear complexes revealed slightly different intramolecular Ag···Ag distances of ca. 3.1 and 2.8 Å for the $CF_3SO_3^-$ and NO_3^- salts, respectively.

Keywords : Silver(I); Silver(I) Complex

単核 Ag(I)錯体$[Ag(tmeda)_2]X$ (tmeda = *N*,*N*,*N*',*N*'-tetramethylethylenediamine; X = $CF_3SO_3^-$, BF_4^- or NO_3^-; Figure 1a)を合成し、単結晶 X 線回折測定を行った。Ag(I)イオンは光や室温で容易に還元されてしまうため、合成は遮光し、-20 °C にて行った。また、配位子 tmeda の比を下げることで二核錯体$[Ag_2(\mu\text{-tmeda})_2](CF_3SO_3)_2$および$[Ag_2(\mu\text{-tmeda})_2](NO_3)_2\cdot C_2H_5OH$ の合成にも成功した(Figure 1b and c)。二核錯体の構造解析の結果、Ag···Ag 間距離は CF_3SO_3 塩では約 3.1 Å、NO_3 塩では約 2.8 Å と異なることが分かった。

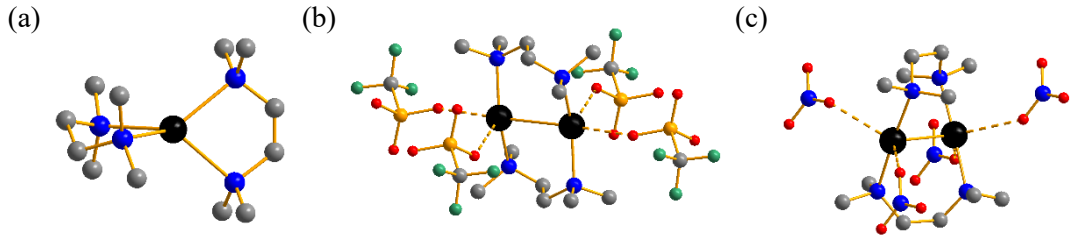

Figure 1. Structures of (a) $[Ag(tmeda)_2]^+$, (b) $[Ag_2(\mu\text{-tmeda})_2](CF_3SO_3)_2$ and (c) $[Ag_2(\mu\text{-tmeda})_2](NO_3)_2\cdot C_2H_5OH$ (C_2H_5OH is not shown for clarity)