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Non-coulombic ionic crystals with non-alternate arrangement of complex cations and inorganic anions

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In natural ionic solids, cations and anions are alternately arranged to avoid Coulombic repulsion between them. Thus, it is very hard to imagine that a number of cations and anions are separately aggregated to form a non-alternate arrangement. As part of our continuing research on the development of chiral multinuclear and supramolecular coordination systems with thiol-containing amino acids, we designed and synthesized a cationic $\text{Au}^{\text{I}}_4\text{Co}^{\text{III}}_2$ hexanuclear complex having both D-penicillamine and 1,2-bis(diphenylphosphino)ethane. Remarkably, this complex was found to crystallize with appropriate inorganic anions to form ionic crystals, in which six $\text{Au}^{\text{I}}_4\text{Co}^{\text{III}}_2$ complex-cations are aggregated into an octahedron-shaped supramolecular structure, with the concomitant aggregation of inorganic counter-anions into an unprecedented cluster structure.

Biography

Takumi Konno received his PhD degree in 1985 from University of Tsukuba. After working at University of Cincinnati as a Postdoctoral fellow, he became an Assistant Professor at University of Tsukuba in 1987. In 1997, he moved to Gunma University as an Associate Professor and was promoted to a Full Professor in 1998. He was appointed as a Full Professor of Osaka University in 2000. He has published more than 200 papers in reputed journals and is now serving as a section editor of Chemistry Letters and a research director of CREST (Japan Science and Technology).

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