

Takumi KONNO, Professor

Department of Chemistry,
Graduate School of Science, Osaka University,
Toyonaka, Osaka 560-0043, Japan
Tel: 81(Japan)-6-6850-5765, FAX 81-6-6850-5765
E-mail: konno@chem.sci.osaka-u.ac.jp



Education

Ph. D. (March, 1985), M. Sci. (March, 1982), B. Sci. (March, 1980): University of Tsukuba

Academic Carrier

1985 (April)-1986 (March): Post-doctoral fellow, Department of Chemistry, University of Tsukuba (supervisor: Prof. Jinsai Hidaka)

1986 (April)-1987 (September): Post-doctoral fellow, Department of Chemistry, University of Cincinnati (supervisor: Prof. Edward Deutsch)

1987 (October)-1994 (October): Assistant Professor, Department of Chemistry, University of Tsukuba

1994 (November)-1996 (December): Lecturer, Department of Chemistry, University of Tsukuba

1997 (January)-1998 (March): Associate Professor, Department of Chemistry, Faculty of Engineering, Gunma University

1998 (April)-2000 (September): Professor, Department of Chemistry, Faculty of Engineering, Gunma University

2000 (October)- : Professor, Department of Chemistry, Graduate School of Science, Osaka University

Total Publications

SCI: 177 (August 2011)

Representative Publications

(1) T. Konno, T. *Bull. Chem. Soc. Jpn.* **2004**, *77*, 627-649 (Accounts). (2) Toyota, A.; Yamaguchi, T.; Igashira-Kamiyama, A.; Kawamoto, T.; Konno, T. *Angew. Chem. Int. Ed.* **2005**, *44*, 1088-1092. (3) Taguchi, M.; Igashira-Kamiyama, A.; Kajiwara, T.; Konno, T. *Angew. Chem., Int. Ed.* **2007**, *46*, 2422-2425. (4) Sameshima, Y.; Yoshinari, N.; Tsuge, K.; Igashira-Kamiyama, A.; Konno, T. *Angew. Chem., Int. Ed.* **2009**, *48*, 8469-8472. (5) Igashira-Kamiyama, A.; Konno, T. *Dalton. Trans* **2011**, *40*, 7249-7263 (Perspective).

Research Interests

Throughout the research carriers, extensive efforts have been devoted to the elucidation of coordination behavior of sulfur- or selenium-containing ligands toward various transition metal ions and their reactivities after coordination to a metal center. Current research interest is directed toward the rational, stepwise creation of heterometallic polynuclear and supramolecular complexes that show unique chiral structures and properties by utilizing simple organic ligands. For this purpose, a variety of metal complexes with octahedral, square-planar, or linear geometry have been synthesized from thiol-containing amino acids, and their functionality as chiral multidentate metalloligands have been investigated.

Can We Create a Variety of Chiral Heterometallic Compounds from a Single Kind of Amino Acid?

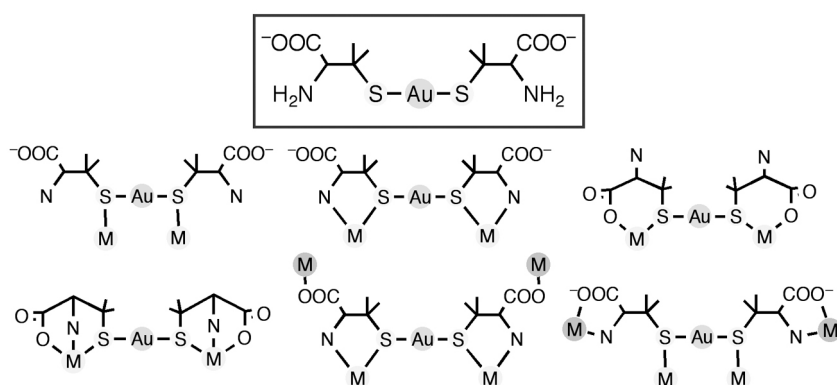
Takumi Konno

¹Department of Chemistry, Graduate School of Science, Osaka University, Toyonaka, Osaka 560-0043, Japa

konno@chem.sci.osaka-u.ac.jp

The design and creation of metal-containing molecular aggregates have attracted increasing attention not only in the field of coordination chemistry but also in supramolecular chemistry. This is because of their fascinating structures and properties that are not expected for individual molecules. The most common approach to create molecular aggregates of this class is the one-step assembly of multidentate organic ligands having specific metal-binding sites in combination with transition metal ions. However, this approach often encounters difficulty in the rational creation of heterometallic systems, as well as difficulty in the control and modification of their overall structures. An alternative approach that could overcome these difficulties is the use of metal complexes bearing several donor groups, which act as a metalloligand to a variety of metal ions. Thus, we have been investigating the metal-binding ability of chiral metal complexes derived from chelating thiolate ligands, such as 2-aminoethanethiolate, L-cysteinate, and D-penicillamine (D-pen).

Recently, we found that the D-penicillaminato gold(I) complex, $[\text{Au}(\text{D-pen-S})_2]^{3-}$, acts as a functional metalloligand toward transition metal ions that prefer to take octahedral, square-planar, or linear geometry, leading to the formation of heterometallic polynuclear and supramolecular species that show unique structures and properties.¹ In this complex, two D-pen ligands coordinate to a linear Au^{I} center only through thiolato groups, thus leaving two amine and two carboxylate groups as potential binding sites for additional metal ions, besides two coordinated thiolato groups. Here we present this gold(I) metalloligand system, focusing on how a variety of chiral metalloaggregates can be constructed and how their structures and properties are controlled by the nature of reacting metal ions, as well as the reaction conditions employed. Another metalloligand system will also be presented.



(1) Igashira-Kamiyama, A.; Konno, T. *Dalton. Trans* **2011**, 40, 7249-7263.