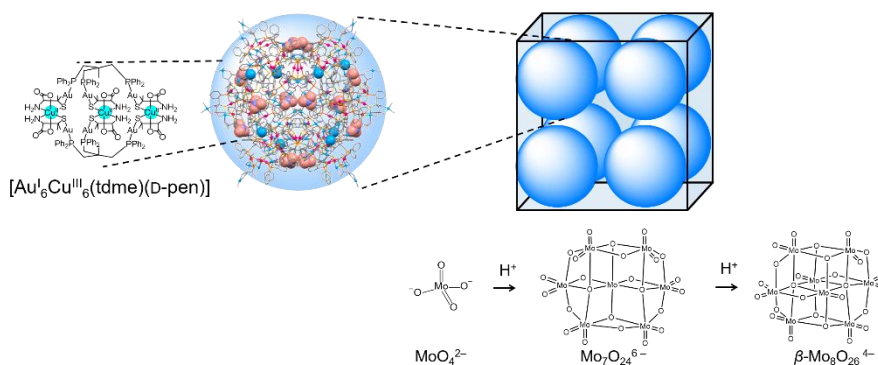
	Tatsuhiko KOJIMA
	Associate professor
	Department of Applied Chemistry, Kobe City College of Technology
	tkojima@kobe-kosen.ac.jp
http://www.kobe-kosen.ac.jp/department/staff/chem/tkojima.html	

Research keyword: Metallosupramolecule, Crystalline flask for POMs, Single crystal X-ray analysis with synchrotron radiation

We are interested in the creation of beautiful metallosupramolecular-architecture composed of multinuclear complexes/polyoxometalates and their functionalities. Especially, we would like to develop a reaction field in a crystal as a crystalline flask. Crystalline flask is known as a method to produce a chemical species which is sometimes different from that obtained by a solution reaction due to a limited space. To date, crystalline flask has been studied for organic compounds mainly in hydrophobic metal organic frameworks composed of aromatic linker. Our group has been constructing hydrophilic metallosupramolecular frameworks with amino-acid ligand to make a crystalline flask for inorganic compounds.

Recently, we have successfully prepared a heterometallic 116-nuclear $\text{Au}^{\text{I}}_{72}\text{Cd}^{\text{II}}_{40}\text{Na}^{\text{I}}_4$ cage-of-cage molecule with a diameter ca. 4.7 nm constructed from a large number of small components through hierarchical aggregation. The cage-of-cage molecules are packed in a cubic lattice with a huge cell volume of ca. $4.5 \times 10^5 \text{ \AA}^3$, so as to have large interstices with diameters of more than 3 nm which can be used as a reaction field. Its analogous $\text{Au}^{\text{I}}_{72}\text{Cu}^{\text{II}}_{44}/\text{Au}^{\text{I}}_{72}\text{Cu}^{\text{II}}_{80}$ cage-of-cage crystals showed the accommodation of MoO_4^{2-} and the conversion of MoO_4^{2-} to $\beta\text{-Mo}_8\text{O}_{26}^{4-}$ by way of $\text{Mo}_7\text{O}_{24}^{6-}$ in the crystal, with retention of single-crystallinity. [Chem. Eur. J., 2020, 26, 1827-1833]



Now we are challenging to develop a mesoporous metallosupramolecular-architecture which can function as a crystalline flask for a variety of polyoxometalates or inorganic compounds.

Possible collaborations:

We can offer a precise single crystal X-ray analysis with using synchrotron radiation in SPring-8 in Japan and Pohang Accelerator Laboratory (PAL) in South Korea. Any collaborations to overcome the difficulty in X-ray analysis are welcome.