

# Visiting Professors



Visiting Professor  
**NISHIHARA, Hiroshi** (*from The University of Tokyo*)

### Coordination Programming of Electro-Functional Materials

One goal of molecular electronics is to control electron conduction in molecular wires and networks by combining appropriate molecular units. To evaluate the total performance of the molecular wires, we are developing the construction of linear and branched metal complex oligomer and polymer wires by an interfacial stepwise coordination method and investigating electron conduction properties of internal molecular segments as well as the resistivity at the electrode-molecular wire junction. Also, the surface coordination programming of hetero molecular wires is being applied for development of cyanobacterial photosystem I (PSI)-based photosensors.



Visiting Associate Professor  
**UENO, Takafumi** (*from Kyoto University*)

### Novel Functional Nano Bio-Materials Based on Protein Assembly

Our research interests focus on the understanding, utilization, and design of protein assemblies that promote chemical reactions. We are developing strategies to functionalize natural protein assemblies as well as prepare artificial protein assemblies. This will expand the possibilities of our research into several emerging fields by bringing together the fields of organic chemistry, inorganic chemistry, biochemistry, molecular biology and structural biology.



Visiting Associate Professor  
**OYAMA, Dai** (*from Fukushima University*)

### Development of Highly Functionalized Transition Metal Complexes Based on Non-Innocent Ligands

Redox reactions are one of the most fundamental chemical reactions. Nature often utilizes redox-active organics in chemical transformations. Therefore, significant attention is currently focused on ligand-centered redox reactions in transition metal complexes.

We have investigated the synthesis and properties of the ruthenium complexes containing both pyridyl binding sites and azo, naphthyridine or quinone moieties which are closely related to biologically important molecules. In particular, we have studied on some important reaction systems such as multi-electron CO<sub>2</sub> reductions and H<sub>2</sub> evolution, based on proton-coupled electron transfer (PCET).