Visiting Professors

Visiting Professor
SASAI, Hiroaki *(from Osaka University)*

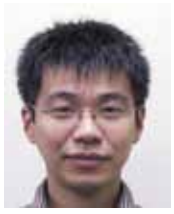
Design and Synthesis of Novel Enantioselective Catalysts

Synthesis of optically active complex molecules using catalytic amount of chiral compounds plays an important role in pharmaceutical industrial processes. Our group engages in the development of novel enantioselective catalyses which involve asymmetric domino reaction promoted by an acid-base type organocatalyst, oxidative coupling of 2-naphthol derivatives using dinuclear vanadium(V) catalysts, spiro bis(isoxazoline) ligand (SPRIX) accelerated transition metal catalyses, *etc.* Recently we have realized a highly enantioselective Pd(II)/Pd(IV) catalysis, formal [n+2] type cycloadditions of a ketimine with an alkyl 2,3-butadienoate, and an enantioselective Friedel-Crafts type reaction using chiral dinuclear vanadium catalyst.

Visiting Associate Professor
UEMURA, Takashi *(from Kyoto University)*

Highly Ordered Polymers by Host-Guest Cross-Polymerization

Chain alignment can deeply influence the ultimate macroscopic properties of a polymeric material; however, a general and versatile methodology for attaining highly ordered crystalline packing of polymer chains with high stability has not been reported so far. We have disclosed a strategy to produce polymeric materials that exhibit a crystalline arrangement promoted by “ordered cross-links.” Divinyl cross-linkers were embedded into a porous coordination polymer (PCP). During the polymerization of vinyl monomers in the channels, the divinyl species crosslink vinyl polymer chains that have formed within adjacent channels of the PCP. This bridging ensures that, on selective removal of the PCP, the polymer chains remained aligned even in the absence of stereoregularity.



Visiting Associate Professor
SUDO, Yuki *(from Nagoya University)*

Understanding and Controlling the Photoactive Proteins

Light absorbing photoactive proteins show characteristic colors originating from a species specific energy gap between their ground state and excited state, which leads to different characteristic absorption maxima (λ_{max}). Among these proteins and their cognate chromophores, the rhodopsins are known to show a large variation in their absorption spectra depending on the interaction between the apoprotein (opsin) and the retinal chromophore. Another striking characteristic of the rhodopsins is their wide range of seemingly dissimilar functions. Our research are roughly divided into three topics as follows; i) Discovery of novel microbial rhodopsins from the nature, ii) Identification of the biological function and investigation of the structure and the structural change during the photoreaction, and iii) Development of the rhodopsin-based optical tools for the life scientists.