“Merging Organic Synthesis and Life Science by Catalysis: From Asymmetric Catalysis to Oxidative Clearance of Alzheimer’s Aβ”

Abstract. We are pursuing to expand the scope of catalysis in organic synthesis as well as life science. Because “life is simply a matter of chemistry”, artificial catalysis in cells will be a new modal of medicine (catalysis medicine). I will present our recent results in: 1) (aerobic) oxidative coupling and peptide cleavage reactions using copper catalysts based on radical-conjugated redox catalysis (RCRC) concept, 2) asymmetric catalysis and protecting group-minimum C-C bond-formation based on hard anion-conjugated soft metal (HASM) catalysis concept, and 3) organo-catalyzed visible light photo-oxygenation of amyloid β (Aβ) under physiological conditions and its effects on aggregation and neurotoxicity of Aβ.