

Bioinspired Coordination Chemistry for Drug Development & Energy Conversion

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Enzymes, responsible for thousands of metabolic processes that sustain life, are macromolecular biological catalysts. Molecular biomimetics is an emerging area where hybrid technologies are developed by using the tools of synthetic chemistry, molecular biology and nanotechnology. In this talk, we will present our recent results on the molecular biomimetics for metal-reactive oxygen species mimicking the active site of O₂ activating metalloenzymes. The metal ions and the supporting ligands are found to be important factors that control the geometric and electronic structures of the metal-reactive oxygen species. Reactivity studies performed with the metal-reactive oxygen species toward external substrates provide mechanistic insight into the active site of metalloenzymes for small molecule activation. Finally, we are going to introduce our ongoing research at UNIST on bioinspired inorganic-organic coordination chemistry for medicinal applications and small molecule activation related on the energy conversion.



