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National University of Singapore (NUS). Before joining NUS, he was a post-doctoral researcher in the Chemical and Biomolecular Department at the University of Wisconsin -Madison. He received his PhD degree from Georgia Institute of Technology in 2002. His present research interests include green catalysts, microfluidics, sensors and industrial wastewater treatments. He is a prolific author with more than 120 SCI journal papers and an h-index of 29.

报告摘要:

Recently, we developed a number of enzyme mimetic catalysts which can be used to replace ferrous ions for advanced oxidation processes. The catalysts are metaloligopeptide complexes, similar to the structure of biological enzymes, but they can be tailored-made and produced in a large scale. The metal center of the catalysts can be oxidized by H2O2 or hypochlorite readily to form high-valence metal species, which then oxidize aromatic or unsaturated compounds with high specificity and molecular efficiency. Under neutral or alkaline pH, they also catalyze the polymerization of aromatic compounds such as phenol. These reactions are highly specific as they do not involve free radical reactions as classic Fenton reactions. They can work at an extremely low concentration even at 0.01 parts-per-million (ppm) level over a wide pH range. Interestingly, the catalysts also show an inverse dosage dependent behavior, i.e. the reaction rate increases with decreasing H2O2 concentration. 化工资源有效利用国家重点实验室 生物医用材料北京实验室