Frontier Chemistry Center
フロンティア化学教育研究センター

講演会

演 題：**How Bacteria Biosynthesize Isonitrile Peptides and Possible Function in Metal Acquisition**

講 師：**Prof. Wei-chen Chang**
College of Sciences, NC State University

日 時：2024 年 5 月 17 日（金）15:00~16:30

場 所：工学部 材料化学棟 MC030

Abstract：

Isonitrile, a functional group that has a C-N triple bond, is deployed in a few natural products. In particular, isonitrile-containing peptides (INPs) are biosynthesized by bacteria including *Streptomyces* and *Mycobacteria*. To survive under metal limitation conditions, the producing organisms develop metal acquisition pathways to acquire essential elements. Thus, the involving enzymes might serve as candidates to fight against bacterial infection. In this talk, I will discuss the mechanism of how non-heme iron enzymes enable conversion of glycine into isonitrile through oxidative decarboxylation. Because this is a conserved approach used to biosynthesize isonitrile group, we use these enzymes to access the structure of INPs produced by *M. tuberculosis* and others. A versatile chemical synthesis is developed and applied to prepare INPs. Moreover, proton NMR titration and high-resolution mass spectrometry demonstrate that INPs are specific for copper instead of zinc under current experimental conditions.

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