

# **Multicopper Clusters Enable Oxidative Phenol Macrocyclization (OxPM)**

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## **Abstract:**

The biosynthesis of glycopeptide antibiotics such as vancomycin and other biologically active biaryl-bridged and diaryl ether-linked macrocyclic peptides includes key enzymatic oxidative phenol macrocyclization(s) of linear precursors. However, a simple and step-economical biomimetic version of this transformation remains underdeveloped. In the talk, I will present highly efficient conditions for preparing biaryl-bridged and diaryl ether-linked macrocyclic peptides based on multicopper(II) catalysts. The selective synthesis of ring models of vancomycin and the arylomycin cyclic core illustrate the potential of this technology to facilitate the assembly of complex antibiotic macrocyclic peptides whose syntheses are considered highly challenging. The unprecedented ability of multicopper clusters to chelate tethered diphenols and promote intramolecular oxidative coupling reactions demonstrates that copper clusters can catalyze redox transformations that are not accessible by smaller metal catalysts.