

Review of multifrequency EPR of copper in particulate methane monooxygenase

Sabastiano S. Lemos, Hua Yuan, Mary Lynne Perille Collins, William E. Antholine

There is substantial interest in methane monooxygenase because this enzyme converts methane to a potential fuel source, methanol, detoxifies trichloroethylene, and uses a green house gas as a reactant. Particulate methane monooxygenase, pMMO, is a copper enzyme. Of interest to EPR spectroscopists is the accumulation of high concentrations of a type 2 EPR-detectable cupric signal in *Methylococcus capsulatus* (Bath), *Methylomicrobium album* BG8 & *Methylosinus trichosporium* OB3b cells. In addition to the type 2 cupric signal, a broad signal is sometimes found in *M. capsulatus* (Bath) cells. This review focuses primarily on EPR studies and current models for the copper sites in pMMO.