

**MS06-2-1 Time-resolved crystallographic studies on chlorite dismutase
#MS06-2-1**

J. Kamps¹, A.M. Orville¹
¹Diamond Light Source

Abstract

Chlorite dismutase (Cld) is essential to chlorate and perchlorate respiring cyanobacteria, due to its ability to convert chlorite (ClO_2^-), a toxic metabolite, into chloride (Cl^-) and molecular oxygen (O_2).¹ Cld from *Cyanothece* sp. is a homodimeric heme *b*-containing enzyme located in the cytosol. Production of O_2 by Cld involves the formation of an O–O bond, which is a rare occurrence both biologically and abiotically, and was long thought to be exclusive to photosystem II. According to the current understanding of the mechanism (Figure 1), a high spin Fe(IV)=O (compound II) is formed as an intermediate. In order to further understand the structural dynamics and intermediates formed during enzymatic catalysis, we are working towards time resolved crystallographic and complementary methods to study this reaction. Here we present the latest results.

References

1) I. Schaffner et al., Mol. Microbiol., 96, 1053-1068 (2015); 10.1111/mmi.12989

Figure 1: Chlorite dismutase mechanism

