THE ENZYMATIC MECHANISM OF OXALATE DECARBOXYLASE INVESTIGATED BY EPR AND ENDOR. Alexander Angerhofer, Department of Chemistry, University of Florida, Box 117200, Gainesville, FL 32611.

High-Field EPR combined with ENDOR experiments demonstrate that substrate (oxalate) binds bidentate to the N-terminal Mn(II) site in oxalate decarboxylase (OxDC). This raises the question about the binding of oxygen which is considered a co-catalyst for this enzyme. Wild-type OxDC shows a very small ability to convert oxalate via oxidation (oxidase activity). A flexible loop segment, SENS161-164 is responsible for directing the enzyme to either decarboxylase or oxidase activity. We present recent progress in our efforts toward a comprehensive understanding of the catalytic mechanism of this enzyme.