

## **Redox enzymes for biotechnology: modelling (and other) studies of laccases and hydrogenases**

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In this talk I will focus on our recent studies on redox proteins, especially on laccases and hydrogenases, two classes of enzymes that present interesting possibilities for biotechnological applications. Laccases are multicopper oxidases capable of nonspecifically oxidizing a wide variety of organic compounds while reducing dioxygen to water. These enzymes contain two copper centres, namely the T1 centre responsible for the oxidation of the organic compounds, and the T2-T3 centre, responsible for dioxygen reduction. [NiFe]- and [NiFeSe]-hydrogenases are metalloenzymes that catalyze the production or oxidation of molecular hydrogen, which is regarded as an alternative fuel. I will present studies directed at understanding proton transfer as well as substrate permeation and interactions with the active sites of these enzymes. Some of these studies combine modelling methods with experimental structural approaches.