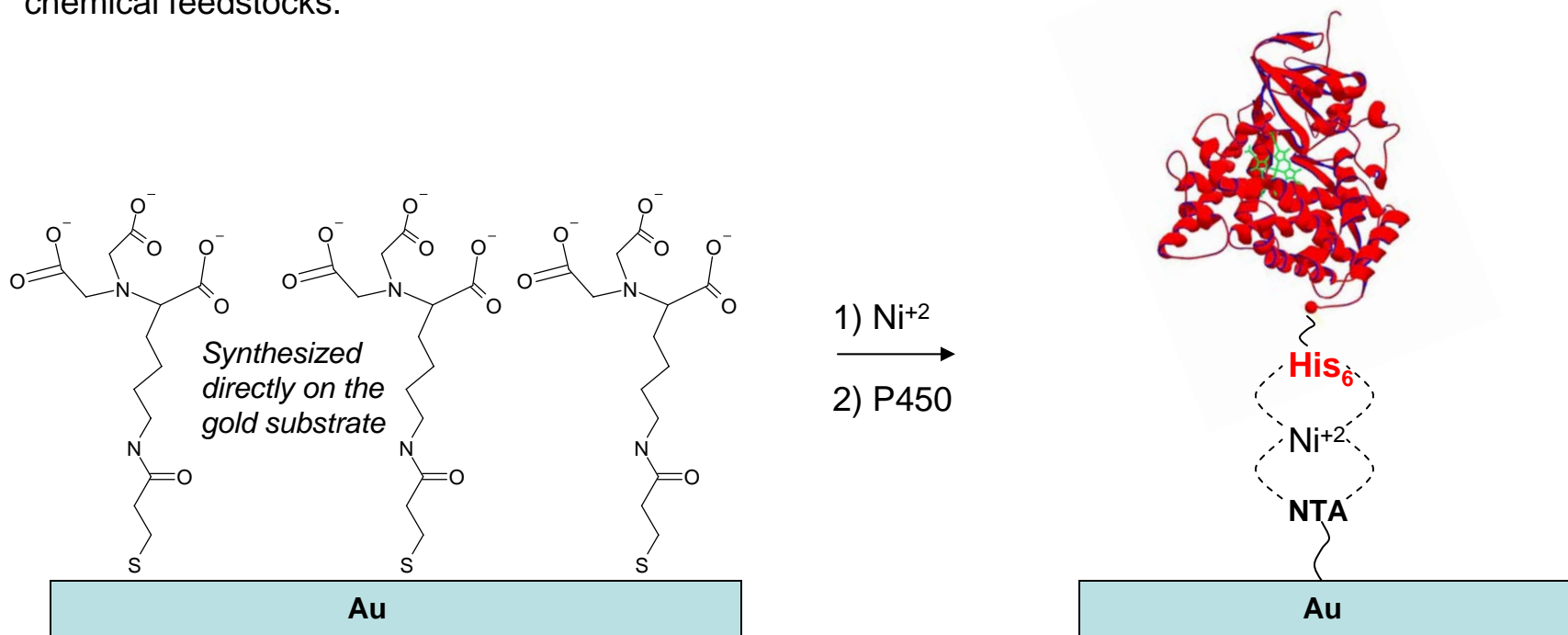


Bioelectrochemical Hydrocarbon Oxidation Using Engineered P450 Cytochromes

Andrew K. Udit, Occidental College, Chemistry, Los Angeles CA 90041

The P450 cytochromes perform challenging oxidation reactions regio- and stereospecifically under ambient conditions, activity that can be exploited for the synthesis of fuels and producing high-value compounds from chemical feedstocks.



In vitro P450 biocatalysis requires devising an efficient electron transfer system that supports native-like activity. A C-terminal hexahistidine motif on P450 BM3 can be stably incorporated and facilitates purification via metal affinity chromatography using Ni-NTA resins. We are exploring methods that exploit this interaction, focusing on derivatizing gold substrates with Ni-NTA motifs utilizing the illustrated scheme.

Preliminary voltammetry experiments yield a reversible redox couple. Subsequent experiments will further explore the nature of this redox couple and possible catalytic activity