

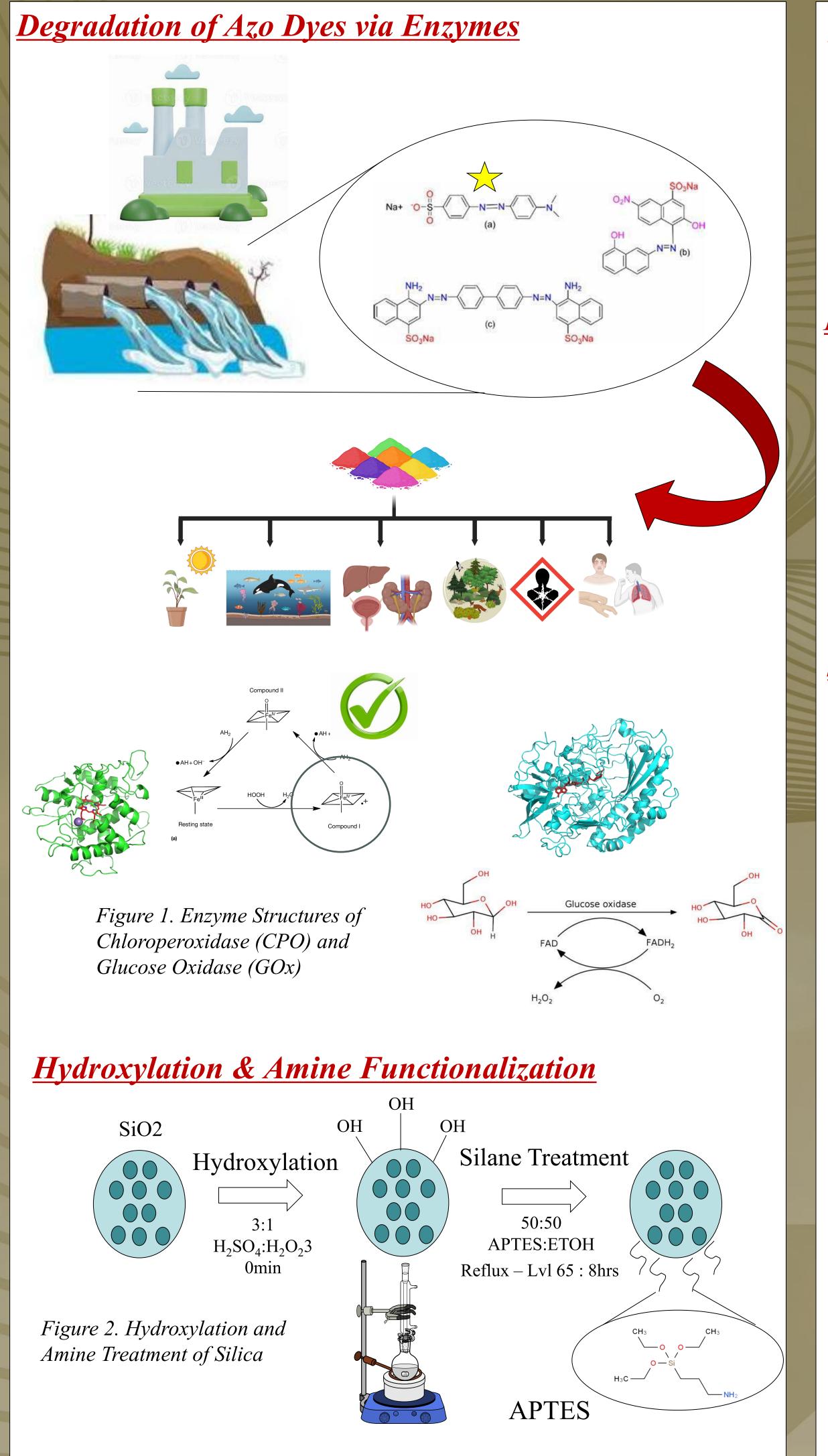
## Degradation of Methyl Orange Using Enzyme Crosslinked Silica

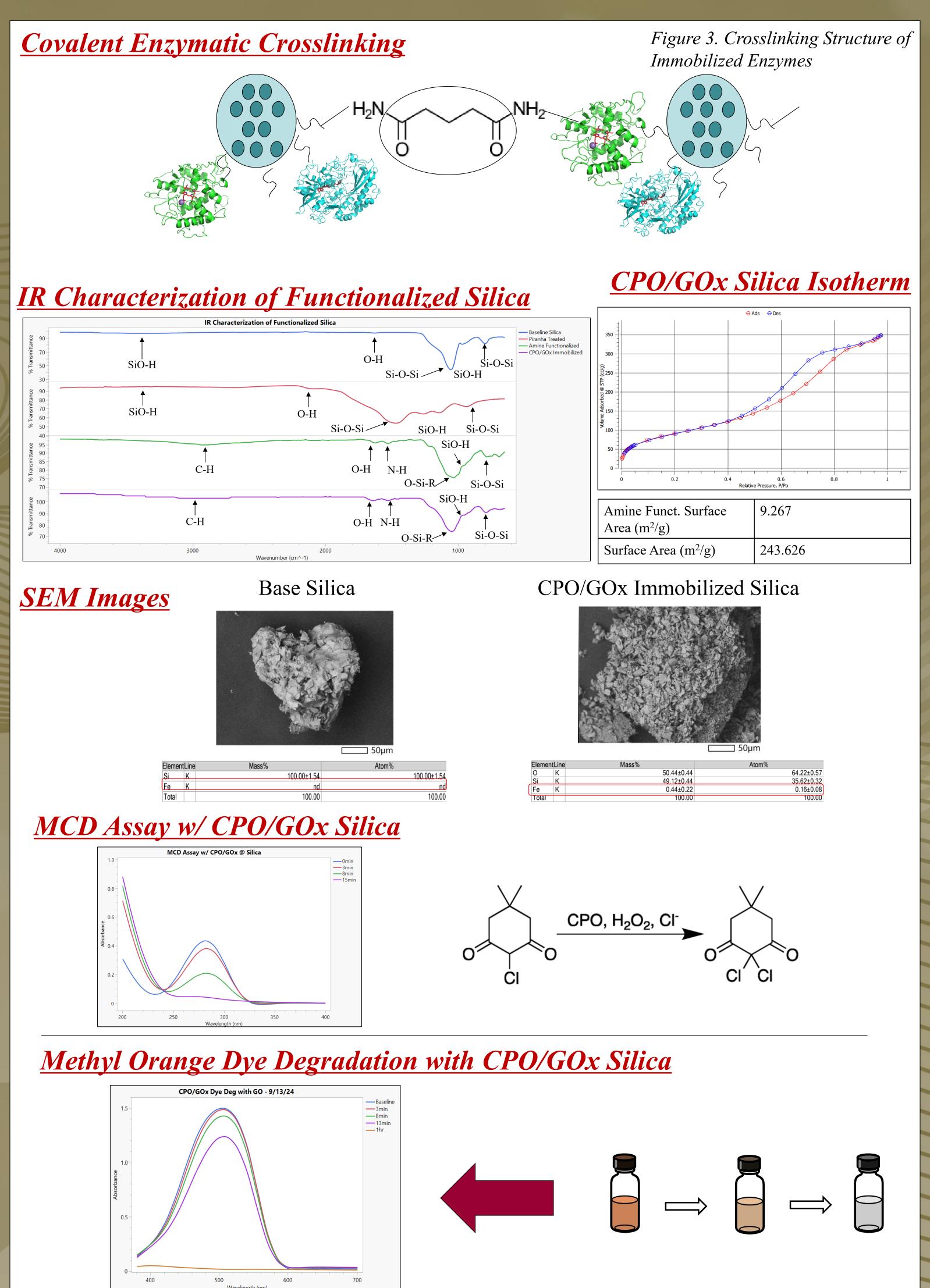


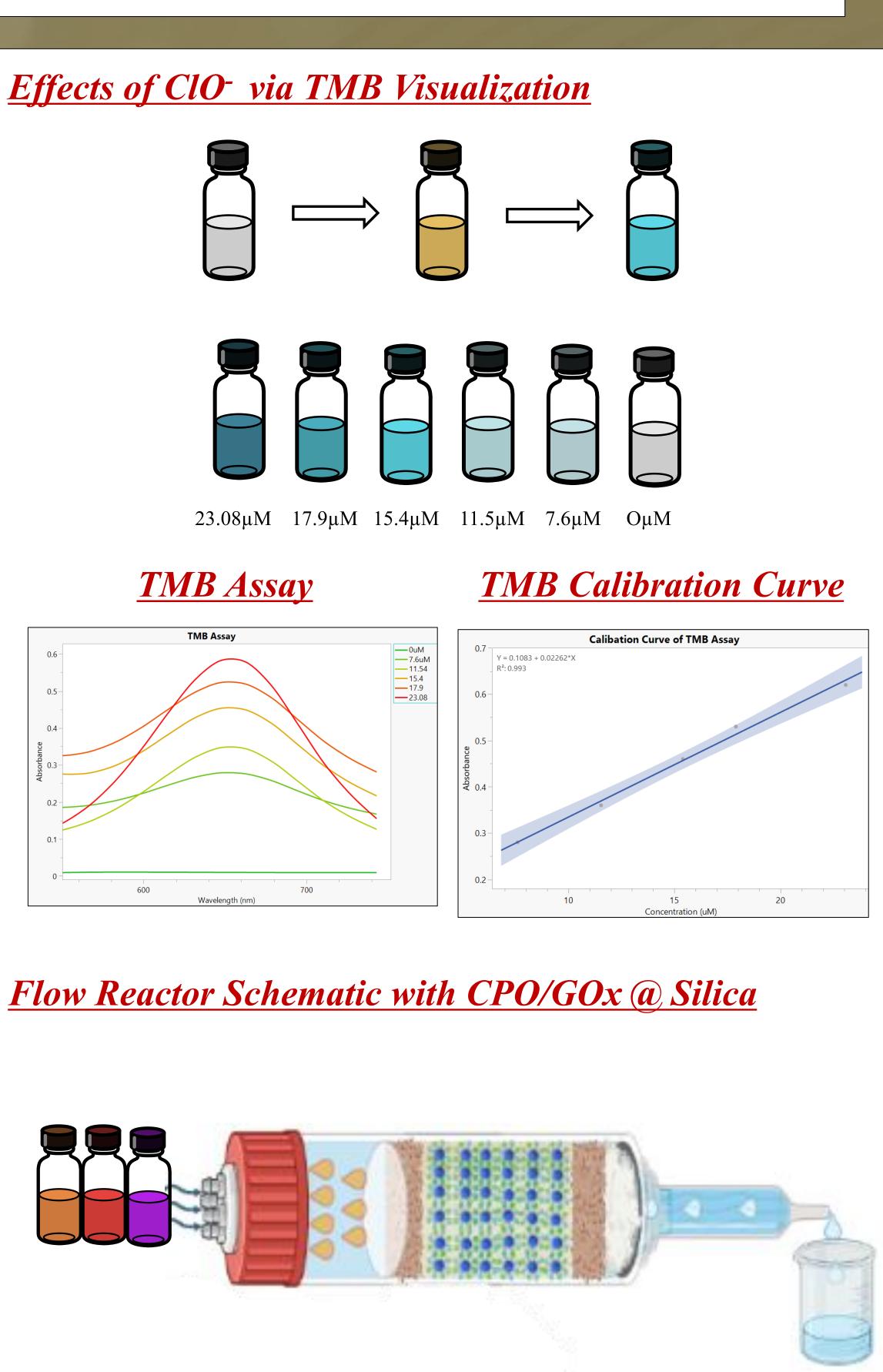
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## Abstract

Wastewater runoff from textile factories contain synthetic dyes that are harmful for the environment, creating a need for effective removal of these pollutants. Biochemical efforts involving enzymes allow for a more cost effective, and greener way of clearing out textile dyes. Chloroperoxidase (CPO) and Glucose Oxidase (GOx) are effective catalysts in nature that allow for the oxidation of compounds into those less harmful. Though, on their own these enzymes are beneficial, being able to degrade dyes in masses would fully harness the overarching power of these enzymes. Silica is a common compound found in nature that due to its relative stability can act as a vessel for CPO and GOx through crosslinking which allows for the diffusion of each enzyme in the presence of textile dyes, methyl orange in this study. Once enzymes are cross-linked, the surface area of the silica effectively increases allowing for a more reactive surface. These reactions can be monitored kinetically to view the action of the enzyme with the dye. Further characterization of the functionalized silica can be done to gain a deeper understanding of the surface area, pore size as well as IR and SEM functionalization to determine the capacity of the crosslinked enzymes.







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