

## Reaction Engineering in Enzyme-catalyzed Reactions

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### ABSTRACT

This plenary lecture will discuss our investigations of the kinetics and mechanism of enzyme-catalyzed reactions. Seminal work published in 1912 by Leonor Michaelis and Maud Leonora Menten, a German man and a Canadian woman, cast light on the reasons why enzymes are so efficient. In this lecture first the history of the Michaelis-Menten kinetics will be reviewed, followed by recent work concentrating on the kinetics and mechanism of transesterification and Michael addition catalyzed by *Candida antarctica* lipase B (CALB). This will be followed by discussing work ongoing in this area in our laboratories. Specifically, we investigated the kinetics of the transesterification of divinyl adipate (DVA) with tetraethylene glycol (TEG) using CALB) as a biocatalyst at 50 °C under solventless conditions. We examined the time-dependence of the reactions with various DVA/TEG ratios. Samples were taken at the specified times, and then the composition and end group structures were analyzed by MALDI-ToF. We found conditions under which polycondensation was minimized and symmetric and asymmetric telechelic oligomers were obtained. Other preliminary studies will also be discussed.