Protein engineering of enzymes for process applications

Scientific progress in the field of enzyme modification today enables the opportunity to tune a given biocatalyst for a specific industrial application. Much work has been focused on extending the substrate repertoire and altering selectivity. Nevertheless, it is clear that many new forthcoming opportunities will be targeted on modification to enable process application. This article discusses the challenges involved in enzyme modification focused on process requirements, such as the need to fulfill reaction thermodynamics, specific activity under the required conditions, kinetics at required concentrations, and stability. Finally, future research directions are discussed, including the integration of biocatalysis with neighboring chemical steps.