

Abstract
Process Economics Program Report 241
BIOCATALYSIS
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Biocatalysis is a term used to describe the catalytic activity of biological systems, which includes living whole cells, parts of cells and enzymes. Humans have harnessed the capabilities of biocatalysts for centuries to generate useful products.

The ability of biocatalysts to selectively produce useful products under relatively mild conditions compared to its chemical catalyst counterpart make biocatalysts an interesting and powerful addition to a process synthesis "tool-box".

Recent advances in technology have markedly increased the ability of industry to discover new biocatalysts and optimize their performance. These advances are coming at a time when both the chemical and pharmaceutical industries are facing increasing pressure to produce more effective products and to make them more efficiently.

This report discusses the advances in technology for the improvement of biocatalyst performance and the resulting intellectual property being generated.

The process economics are analyzed for two processes for the manufacture of the L-amino acid, L-aspartic acid by biocatalysis. Both the existing and new processes are analyzed. In the new process the coupling of two biocatalysts allows for the elimination of a chemical catalyst, and reconfiguration of the process. This process reconfiguration results in the virtual elimination of a by-product produced in the existing process.

This report will be of interest to the chemical and pharmaceutical industries currently using or planning the incorporation of biocatalysts into their process portfolio.

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