

Session 3

Bioprocessing Research

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Bioprocessing can be described as the process whereby a material is converted into another using biological agents. This area combines chemical engineering, biology, and fermentations. This can also refer to an overall process in which one key step is carried out biologically (the other steps may be grinding, separations, purification, and so on). This session and the associated posters surveyed current efforts in the interest of taking a potentially valuable bioconversion and testing it as a process. The products included ethanol, fumaric and succinic acids, and the enzyme cellulase. The reactor schemes described included stirred batch reactors, slurry reactors, immobilized-cell fluidized-bed columnar reactors, and improved airlift columnar reactors.

Bioprocessing research also involves providing a better understanding of the operation of the reactor system. Even the basic stirred tank can provide challenges of oxygen transfer, especially into filamentous systems. Separations are a critical part of the bioprocess, and were represented by *in situ* gas stripping of a volatile product such as ethanol or the investigation of protein fouling of the membranes used to separate biomass and products.