

Downstream Processing of Bioproducts

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The recovery and purification of the desired products from bioreactor outflow is greatly influenced by the nature of the products themselves, the size of the market, the need to achieve market and legally required specification standards; and the market value of the product. As the scale increases, economic methods of conducting product recovery and purification become not only important but essential for competitive process integration. It is therefore worthwhile to conceive a proper downstream scheme early in the process development, which requires laboratory development and process engineering efforts. Even small improvements can be very profitable in terms of the overall process.

This session includes papers from presentations on such operations as adsorption, membrane filtration and electrodeionization, which is gaining importance in several new process developments such as enzyme recovery and purification, elimination of suspended solids and colloidal materials from biomass feed streams as well as salt removal in chemical, pharmaceutical, and biomass process industries. Other presentations focused on thermochemical conversions of biological materials into higher-value compounds. Esters and phase-change materials can be made from fats and oils. Polyesters are a class of polymers that can be produced from biological materials. Likewise lignin can be converted into fuel oxygenates. These presentations and those in the poster session illustrate that biotechnology for fuels and chemicals is not a “stand alone” technology, but must be integrated with separations and other conversion processes.

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