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Expanded Bed Adsorption for Biofuel Recovery from Microbial Cultures

AzTE Case # M11-029

Inventors

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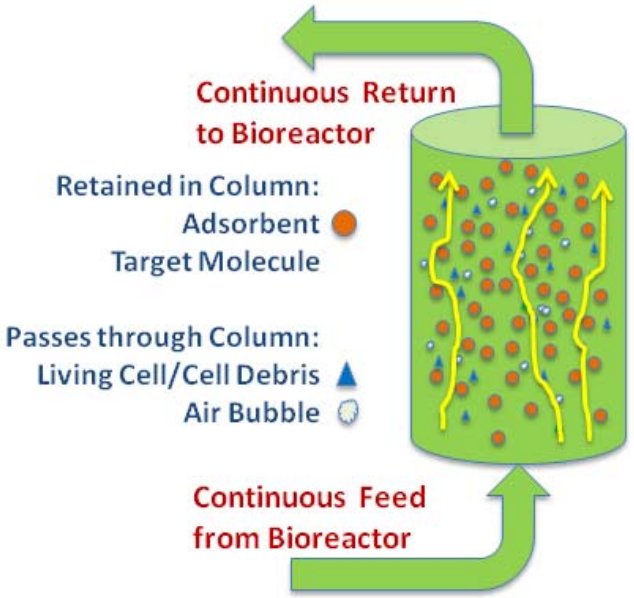
Invention Description

As a result of cytotoxicity and/or poor net yields, microbial biofuels may typically only accumulate to low final concentrations in culture media. Their efficient, rapid, and thorough recovery from the culture medium is a universal challenge to the biotechnology industry. Solid-phase adsorption is commonly employed to provide high efficiency separations of microbial products from culture media. However, traditional chromatographic applications are poorly compatible with the *in situ* recovery of biofuels.

Researchers at Arizona State University have developed a novel, expanded bed adsorption and elution process for the recovery of biofuel products or precursors from cell culture medium. This is accomplished via an *in situ* and biocompatible approach to enable high and continuous productivity. Separation can be achieved in a manner that does not disrupt cell growth, precludes the use of special cell separation equipment, and requires only minimal energetic input.



Potential Applications

- Recovery and purification of:
  - **Biofuels**
  - **Biochemicals**

Benefits and Advantages

- **Biocompatible** - achieves separation in a manner supporting continued cell growth and productivity
- **Economical** - a low energy and low cost process
- ***In situ*** - relieves product inhibition and/or reduce contamination through continuous product removal
- **Adaptable** – adsorbent can be easily substituted to meet specific separation needs
- **Scalable** – can be sized to meet process requirements
- **Modular –** External process design amenable to retrofit applications

Intellectual Property Status:

Patent Pending

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