

Engineering Conferences International ECI Digital Archives

Integrated Continuous Biomanufacturing II

Proceedings

Fall 11-4-1985

The use of dynamic control in periodic counter current chromatography

Hans Blom

GE Healthcare, hans.blom@ge.com

Helena Skoglar

GE Healthcare

Follow this and additional works at: http://dc.engconfintl.org/biomanufact_ii



Part of the [Biomedical Engineering and Bioengineering Commons](#)

Recommended Citation

Hans Blom and Helena Skoglar, "The use of dynamic control in periodic counter current chromatography" in "Integrated Continuous Biomanufacturing II", Chetan Goudar, Amgen Inc. Suzanne Farid, University College London Christopher Hwang, Genzyme-Sanofi Karol Lacki, Novo Nordisk Eds, ECI Symposium Series, (2015). http://dc.engconfintl.org/biomanufact_ii/83

This Conference Proceeding is brought to you for free and open access by the Proceedings at ECI Digital Archives. It has been accepted for inclusion in Integrated Continuous Biomanufacturing II by an authorized administrator of ECI Digital Archives. For more information, please contact franco@bepress.com.

The use of Dynamic Control in Periodic Counter Current Chromatography

Hans Blom, GE Healthcare
Hans.Blom@ge.com
Helena Skoglar, GE Healthcare

Key Words: Periodic Counter Current Chromatography, Dynamic Control, Protein A

The interest for use of continuous processing in biotech downstream operations is rapidly growing, driven by the gains in productivity, product stability and reduced cost of goods. Continuous processing encompasses a range of different approaches and can relate to both single step operations as well as semi- to fully continuous processes. Improvements in equipment and hardware have now made several commercial systems for continuous chromatography available. As implementation of various strategies for continuous processing becomes more common, the demand/need for reliability in monitoring with existing hardware solutions is steadily increasing. Integration of process analytical technologies will be the determining factor for successful implementation at clinical/bioprocess scale. Periodic counter current chromatography as used by the ÄKTA™ pcc system is one technology enabling continuous processing. A key feature associated with operation of this system is the intrinsic ability supplied by the dynamic control function to automatically cope with variations related to fluctuations in feed compositions e.g. when using perfusion feed and/or changes in chromatographic media performance occur. The capacity of the embedded control strategy will be demonstrated by examples from affinity purification of monoclonal antibodies and human IgG using Protein A chromatographic media. This will include the ability of the dynamic control to adapt to varying product titer in the feed as well as varying the dynamic binding capacity of individual columns. Additionally, different applications involving both bind/elute as well as flow through modes of chromatography will be discussed.