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BOOK OF SHORT ABSTRACTS

This volume contains the short abstracts presented at the 12th International Chemical and Biological Engineering Conference - CHEMPOR 2014, held in Porto, Portugal, between September 10th and 12th, 2014.

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POSTER SESSION - CHEMICAL ENGINEERING FUNDAMENTALS AND PRACTICE

Separation Of Human Immunoglobulin G Subclasses Using Monolith Technology

P-FP4

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Scheme 1. Represantative structures of the human IgG subclasses [1].

In the present study, a step gradient elution method was evaluated for the separation of human immunoglobulin G (hIgG) into its subclasses on CIM r-protein A monolithic column. hIgG was loaded onto the column and bound protein was eluted with a pH gradient. The subclass content of the eluted fractions was analyzed by enzyme-linked immunosorbent assay (ELISA). Results showed that separation of IgG3 from the other three subclasses can be successfully achieved with high selectivity (100%) and throughput on monolithic media. It was also revealed that enriched fractions of IgG1 and IgG2 could be obtained from purified hIgG in a 28 minutes long chromatographic run. Three fractions with high IgG1 content (89.1%, 94.3% and 88.8%) were recovered. Furthermore, IgG2 was enriched to 64% successfully. A rapid step gradient elution scheme without any additives in buffers was proven to obtain enriched preparations of the two important subclasses with high throughput.

Microprotect project -The use of encapsulated essential oils for protection of stored cereals and legumes

P-FP5

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Food safety is a problem that concerns society nowadays. The current preservative techniques rely on the action of synthetic pesticides that in some cases originate food pathogens that lead to severe foodborne diseases. There is a current need for new environmentally safe and efficient protective methods.
Microprotect project revisits this necessity by conceiving a methodology that exploits the antimicrobial and inseticide activity of essential oils, combined with a controlled release system, applied to cereal and bean storage.

Analysis of Internal Variables of a Distillation Column Operating with Distributed Control

P-FP6

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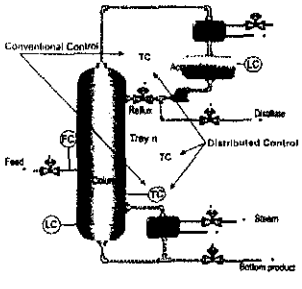

A proposal of a control system with distributed heating action between reboiler and one stage of stripping section has been studied, demonstrating reductions of the transition time when this strategy was compared to the conventional dual control. So, the objective of this work was to simulate the process with the distributed strategy analysing the internal profiles when feed temperature were disturbed. Tests were carried out using Aspen Hysys® software and demonstrated that the internal profiles show similar final steady states for temperature, pressure and ethanol fractions when distributed and conventional systems were used. An alteration in vapor flow inside the column due to the internal heat source was observed and this was reflected in reach faster the stationary state using the distributed approach.