

Dr. Mahmoud El-Halwagi

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RÉSUMÉ

Motivated by the complex and staggering nature of environmental problems, mass integration has evolved as a holistic approach to the generation, separation, and routing of species and streams throughout the process. It is a systematic methodology that provides a fundamental understanding of the global flow of mass within the process and employs it in identifying performance targets and optimizing the allocation and generation of streams and species. The presentation starts by discussing key concepts and tools in the area of mass integration and how this methodology can be used to provide global insights on the process performance. Special emphasis is given to the notion of targeting which enables the benchmarking of process performance ahead of detailed design.

Traditionally, mass integration techniques have been based on tracking individual chemical species. Component material balances have always been at the heart of any design approach. While the nature and quantity chemical constituents is important in characterizing and designing chemical processes, the question is whether or not it is essential to track them for all systems. Interestingly, the answer is no! There are many design problems that are not component dependent. Instead, they are driven by properties or functionality of the streams and not by their chemical constituency. The second part of the presentation discusses the concept of process integration which is defined as a functionality-based, holistic approach to the allocation and manipulation of streams and processing units which is based on tracking, adjustment, assignment, and matching of functionalities throughout the process. In particular, the presentation will show systematic rules and visualization techniques for the identification of optimal mixing of streams, their allocation to units based on their properties, and task identification. Case studies will be used to illustrate the basic concepts and applicability. The presentation also includes a discussion on promising research directions in the area of property integration and its relationship to molecular design.

Chaire CRSNG en génie de conception environnementale Séminaire



ÉCOLE
POLYTECHNIQUE
M O N T R É A L



Conception de procédés fondée sur la fonctionnalité: De l'intégration de la matière à l'intégration des propriétés

Judi 02 octobre 2008

10:30 - 11:30

Salle: B-405

**Édifice principal
de l'École Polytechnique**
Campus de l'Université de Montréal
La présentation sera en anglais

Information :

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Chaire CRSNG en génie
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BIOGRAPHIE

Mahmoud El-Halwagi est professeur titulaire au département de génie chimique Artie McFerrin à l'université Texas A&M, College Station, Texas. Les principaux domaines de recherche qui l'intéressent sont l'intégration de procédés, conception durable et prévention de la pollution.

Dr. El-Halwagi est co-auteur/co-éditeur de 4 livres et de nombreuses publications. Il a œuvré comme consultant dans une large gamme de produits pour les industries chimique, pétrochimique, pétrolière, pharmaceutique, forestière et d'apprêtage de métaux. Dr. El-Halwagi a reçu divers prix, entre autres le Fluor Distinguished Teaching Award, le Texas A&M Association of Former Students Distinguished Achievement Award, le National Science Foundation's National Young Investigator Award, le Mortar Board Favorite Educator Award, le Birdsong Merit Teaching Award, et le Fred H. Pumphrey Award. Le Professeur El-Halwagi détient un B.S. et une M.S. de l'Université du Caire et également un PhD de l'Université de Californie, Los Angeles, tous en génie chimique.

CARTE DU CAMPUS

