

Kister Distillation Symposium 2015 (Full Papers)

**Topical Conference at the 2015 AIChE Spring Meeting and 11th
Global Congress on Process Safety**

**Austin, Texas, USA
26-30 April 2015**

ISBN: 978-1-5108-1241-3

Printed from e-media with permission by:

Curran Associates, Inc.
57 Morehouse Lane
Red Hook, NY 12571



Some format issues inherent in the e-media version may also appear in this print version.

Copyright© (2015) by AIChE
All rights reserved.

Printed by Curran Associates, Inc. (2015)

For permission requests, please contact AIChE
at the address below.

AIChE
3 Park Avenue
New York, NY 10016-5991

Phone: (203) 702-7660
Fax: (203) 775-5177

www.aiche.org

Additional copies of this publication are available from:

Curran Associates, Inc.
57 Morehouse Lane
Red Hook, NY 12571 USA
Phone: 845-758-0400
Fax: 845-758-2634
Email: curran@proceedings.com
Web: www.proceedings.com

TABLE OF CONTENTS

Has Distillation Technology Reached the Golden Age?.....	1
<i>Henry Kister</i>	
(4a) Bibliography of Dr. Elzear Lemieux.....	3
<i>A. N. Vennavelli, Simon Chambers, Tony J. Cai, Ken C. McCarley</i>	
(4b) Flow-Induced Vibration of Trays	12
<i>Richard C. Darton, Wensong Zhang, Paul Taylor</i>	
(4c) Influence of Tray Geometry and Hydraulic Conditions on Vibration Induced Damages of Sieve and Valve Trays	18
<i>Christian Geipel, Andreas Wolgast</i>	
(4d) FRI Test Results and Industrial Applications for New High Capacity Raschig Mini Fixed Valve	24
<i>Michael Schultes, Andreas Danninger, Rene Altmann</i>	
(4e) Troubleshooting and Solving a Gas Treater Downcomer Unsealing Problem	34
<i>Henry Z. Kister, Nashaat M. Mohamed</i>	
(45a) Optimizing Preflash Option for Light Tight Oil Processing.....	50
<i>Soun Ho Lee</i>	
(45b) Complex Atmospheric Preflash Configurations.....	63
<i>Andrew W. Soley</i>	
(45c) Coking Mechanism in Refinery Fractionator Wash Beds.....	96
<i>Gregory A. Cantley, James F. Johnson, Lowell Pless</i>	
(45d) How Does a Collector Tray Leak Impact Column Operation?	105
<i>Daryl Hanson, Jill Brown Burns, Mike Teders</i>	
(45e) Prevent Damage in FCC Main Column Slurry Pumparound Zones with Proper Design and Operation.....	129
<i>Dennis J. Schmude, O. Karpilovskij</i>	
(45f) Maximize Performance & Run Length of a CDU Main Fractionator with Advanced Mass Transfer Components.....	144
<i>Giuseppe Mosca, Katja Kolesnikov</i>	
(45g) Condensate Splitting - What Are the Options?	156
<i>Andrew W. Soley</i>	
(99a) Slippery Slopes: How Should We Calculate the Equilibrium Slope in Multicomponent Distillation?	213
<i>Emily Capek, Ross Taylor, Markus Duss</i>	
(99b) Simulation of Batch Distillation with a Varying Alpha: The Ethanol-Water and Methanol-Water Systems at 1 Atm.....	244
<i>Robert G. Kunz</i>	
(99c) Multicomponent Batch Distillation Optimal Control and Thermodynamic Uncertainties.....	276
<i>Urmila Diwekar, Claudio Rivier</i>	
(99d) Design, Fabrication and Operation of a Distillation System to Recycle Nuclear Waste	292
<i>Andrew (Jack) Eckles</i>	
(99e) Novel Methods to Separate Azeotropic Butanol-Water Mixtures without the Need for Extractive Distillation or Pervaporative Membrane Separation.....	301
<i>Kareemuddin Shaik, Zhonglin Zhang, Hiren Shethna, Kadhim Mohammed</i>	
(99g) A Total Correlation Evaluating User Fitting Unifac Determined from VLE Data Covering 5000 Binaries.....	313
<i>Satoru Kato, Hiroshi Tachibana, Hidetoshi Kuramochi, Ichiro Minamu</i>	
(144a) Modification of the Billet and Schultes-Model for the Hydraulic Modelling of Random and Structured Packing.....	322
<i>Verena Wolf, Markus Lehner, Karin Hoffmann</i>	
(144b) How Sensitive Is Your Treating Plant to Operating Changes – Part 2	337
<i>Attilio J. Praderio, Ralph Weiland, Michael Schultes, Juan Portillo, Glenn Shivelor, Daniel R. Summers, Mark W. Pilling, Markus Duss, Erik Stewart</i>	
(144c) Experimental Investigation of the Effects of Tower Motion on Random Packing Efficiency	348
<i>Norman K. Yeh, Ed Grave</i>	
(144d) Packing Characterization for Post Combustion Capture: Model Development.....	354
<i>Chao Wang, Micah Perry, Gary T. Rochelle, Frank Seibert</i>	
(144e) High Pressure Distillation with Structured Packing - Friend or Foe	363
<i>Simon Chambers, Ken C. McCarley, Anand N. Vennavelli, Tony Cai</i>	

(144g) A Study of Axial Mixing Influence on the Mass Transfer Transferability from Absorption to Distillation Conditions.....	379
<i>Lukas Valenz, Frantisek J. Rejl, Jan Haidl</i>	
(179a) Monitor Fouling in Distillation Towers with Gamma Scanning	385
<i>Lowell Pless, Ben Dumas</i>	
(179c) Quick and Easy Troubleshooting of a Packed Column: Thermal Imaging As a Novel Method.....	394
<i>Hendri Barnard, Elizabeth Du Toit</i>	
(179d) Steps for Troubleshooting Amine Sweetening Plants	408
<i>Glenn Shivelor, Harold Wandke</i>	
(179f) Flooded Condensers Controls: Principles and Troubleshooting.....	425
<i>Henry Z. Kister</i>	
(206a) CFD Study of Sieve Tray Dry Pressure Drops	448
<i>X. P. Li, James R. Whiteley, Mike Resetarits, Tony J. Cai</i>	
(206b) Ripple® Trays for Fouling Applications.....	461
<i>Steven Schon</i>	
(206c) NGL Unit Debottlenecked with UOP Enhanced Capacity MD™ Trays and High Flux™ Tubing for Significant Production Expansion and Energy Optimization.....	472
<i>Bob Miller, Patrick Ronan, Lee Scanlon, Josh Moll, Shanda Fry, Michael Sobczyk</i>	
(206d) Channel Baffles on Trays	492
<i>Daniel R. Summers, Simon Chambers</i>	
(206e) Reverse Vapor Cross Flow Channeling in High-Capacity Trays: Diagnosis and Fixup	511
<i>Henry Z. Kister, Neasan O'Shea, Dan Cronin</i>	
(206f) Should You Consider Moving to Fixed Valves?	534
<i>Scott Hebert, Neil A. Sandford</i>	
(216a) Optimal Design and Synthesis of Ternary Distillation Systems Involving Complex Column Configurations	548
<i>Chafika Adiche, Belaid Ait Aissa</i>	
(216b) Crude Unit Heat Integration - Feed Composition Effects and Current Best Practices.....	556
<i>Andrew W. Stoley</i>	
(216d) Fluidized Packed Beds (FPB) – an Alternative for Process Gas Treatment in “Dirty” Systems?.....	577
<i>Jan Mackowiak, Jerzy Mackowiak, J. Szust</i>	
(216e) Investigation of Fluid Dynamic Parameters in Packed Distillation Columns Using X-Ray Computed Tomography	586
<i>Sebastian Schug, Wolfgang Arlt</i>	
(216g) Analogy of Mass Transfer in Absorption and Distillation Columns: Wetted Wall Column Study	594
<i>Jan Haidl, Frantisek J. Rejl, Lukas Valenz, Vaclav Linek, Michael Schultes</i>	
Author Index	