

Liaison Functions

**Core Programming Topic at the 2012 AIChE Spring Meeting &
8th Global Congress on Process Safety**

**Houston, Texas, USA
1-5 April 2012**

ISBN: 978-1-62276-559-1

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© (2012) by AIChE
All rights reserved.

Printed by Curran Associates, Inc. (2012)

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

Process Safety and Corporate Responsibility	N/A
<i>Michael Dolan</i>	
Innovative Cost-Effective Control Device for Wastewater VOC Emissions (As Required by NESHAPs [BWON, HON, MON, MACT] and Other Regulations)	1
<i>Carl Adams Jr., Lial Tischler, Andrew Edwards</i>	
Automotive Emissions and Regulations Overview of U.S., European, Asian, and Global Standards	26
<i>Aaron Matthews</i>	
LCA As a Sustainability Decision-Making Tool for Regulations and Investment	27
<i>Sarah Widder</i>	
Sustainability Initiatives At Siemens	28
<i>Stephanie Nadeau</i>	
Design - PSM Overview	N/A
<i>M. Sam Mannan</i>	
Design - Educating the Next Generation of PSM Professionals	N/A
<i>Daniel Crowl</i>	
Design - Executive Management and PSM	N/A
<i>Dennis C. Hendershot</i>	
Applying PSM at a Major US Chemical Company	N/A
<i>Peter N. Lodal</i>	
Implementation of a Highly Toxic Materials Management Program at Reliance Industries Limited, India	29
<i>Charles A. Soczek, Ravi Ramaswamy, Dhanavadan M. Modi, Suresh B. Iyengar, Tulsidas Z. Solanki</i>	
Applying MOC as Integral Part of Process Safety Management	N/A
<i>Roy E. Sanders</i>	
Development of Structure/Property Correlations for Water and Ion Transport in Polymers	36
<i>Benny D. Freeman</i>	
Engineered Osmosis: A Rapidly Emerging Separation Technology Platform	37
<i>Jeffrey R. McCutcheon</i>	
Functionalization of Polybenzimidazole Membranes for Pore Size Reduction, Increased Hydrophilicity and Surface Charge	38
<i>Michael Flanagan, Richard Hausman, Isabel C. Escobar, Maria R. Coleman, Tai Shung Chung</i>	
Industrial Test Trials with Membrane Distillation	39
<i>Andrea Metz, Clayton B. Maugans, Chan Tun</i>	
Pervaporative Separation of Water-Alcohol Mixtures Using Ghanaian Zeolite-Clay Filled PVA Composite Membranes	40
<i>Emmanuel G. Ankudey, Mohammed N Zainudeen</i>	
Learning from Major CSB Investigations	N/A
<i>John Bresland</i>	
Learning from an Industrial Chemical Perspective	N/A
<i>Jack Mc Cavit</i>	
Learning from OSHA Investigations of PSM - Regulated Operations	N/A
<i>Mike Marshall</i>	
Continuing Our Process Safety Management (PSM) Journey: How Time and Technology Have Helped Change the Public's View (A Case Study for Where We Are Today and Where We Can Go Tomorrow)	41
<i>Bruce K. Vaughen, Trevor A. Kletz</i>	
Process Safety Management Training for New Engineer	59
<i>Alberto E. Vignale</i>	
The Importance of SAFETY DESIGN On NEW Refineries	71
<i>Laurence Siqueira</i>	
The NSF Small Business Innovation Program - The Search for Transformational Technologies	N/A
<i>Prakash Balan</i>	
Open Innovation At Fortune 500's and What Small Companies Should Know When Doing a Deal	N/A
<i>John Tao</i>	
Leveraging Open Innovation - Experiences in the Small Business Universe	N/A
<i>Vince Sadd</i>	

Mach Five with Your Hair on Fire: Harnessing a Small Business with a Large Corporation	N/A
<i>G. Wyndham Cook</i>	
The Development of An Advanced Biofuel	N/A
<i>Peter Meinhold</i>	
Carbon Dioxide As a Feedstock for Plastics and Resins	N/A
<i>Scott Allen</i>	
Survival Techniques and Technologies of a Startup Specialty Polymer Company	N/A
<i>Earl H. Wagener</i>	
MTR's Experience with the SBIR Program: The Development of Vapor Separation Membranes	N/A
<i>Tim Merkel</i>	
25 Years of Process Design + Manufacturing + R& D and Still Don't Know What I Want to Be When I Grow up	73
<i>Ahmed J. Allawi</i>	
Process Evaluations & Manufacturing Support: From Concept to Commercial	82
<i>Todd A. Whittemore</i>	
Planning and Developing a Career in Process Development	83
<i>Jonathan H. Worstell</i>	
Process Development As An Industry Career Path	115
<i>Joseph B. Powell</i>	
Comparing PHA Review Techniques - A Case History on Review Meeting Dynamics and Missed Hazards	118
<i>Rosalynn Macgregor</i>	
The Structured What If/Checklist - A New Twist On An Old Approach	135
<i>C. Curtis Clements</i>	
Practical Approach to Vendor Package HAZOP Studies and Preparing the Package Vendor for the Ordeal	155
<i>Steven T. Maher, Kristin D. Norton, Edward Reyes, Vasu Vasudevan, Michael Masciantonio</i>	
Cultural and Technological Forces That Are Changing the Knowledge Management Game	172
<i>Cindy Hubert</i>	
Case Histories on Inherent Safety - Risk Reduction Amid Risk Aversion	173
<i>David A. Moore</i>	
The PSV That Did Not Fail. Misconceptions about PSVs	187
<i>Emmanuelle Hagey</i>	
An Introduction to Assessing Process Hazards	198
<i>Seshu Dharmavaram, James A. Klein</i>	
Nanotechnology Enabling Composites: Superhydrophobic Surfaces to Electrical Transparent Conductors	N/A
<i>David Schultz</i>	
Commercial Success in Biomaterials	N/A
<i>Blake Mosher</i>	
Hydrophilic In-Situ Nanocomposites for High Performance Acrylic Applications	N/A
<i>Brian Livengood</i>	
Biobased Materials (Plant Proteins) As Alternatives for Suspected Carcinogens and Other Hazardous Chemicals in Large-Scale Manufacturing Processes	N/A
<i>Dara L. Woerdeman</i>	
Electrochemistry to Transform Fluids and Power Into Higher Value Forms	N/A
<i>Trent Molter</i>	
Beyond BPA-Free: Eliminating Endocrine Disruptors in Plastics	N/A
<i>Stuart Yaniger</i>	
Rapid Water Testing for Volatile Organic Compounds	N/A
<i>Mark C. Peterman</i>	
In Situ Sensors Based on Perfluorinated Sensing Membranes	N/A
<i>Jonathan Thompson</i>	
Materials Development for Advanced Catalysts and Gas Sensors	N/A
<i>William J. Dawson</i>	
A Photo Safari Though a Petroleum Refinery	209
<i>Matthew J. Reisdorf</i>	
Planning for a Career in Refining - What Every Chemical Engineer Must Know	210
<i>Shankar Vaidyanathan, Kevin Turini</i>	

From World Scale Refineries to State of the Art Nano Labs and Super Computers. From Coker to Clean Rooms, From KBPD to LPH. How to Translate Your Past Experience Into a Competitive Advantage?	211
<i>Ahmed Khogeer</i>	
Refinery-Wide Topics for Profitability, Reliability and Safety	212
<i>Mike Siravo</i>	
Modern Loop Tuning Tutorial	218
<i>Tim Olsen, Jim Dunbar</i>	
Case Histories and Technology Innovations for Storage Tank Loss Prevention	225
<i>Szu-Ying Huang, M. Sam Mannan</i>	
Reaction Calorimetry for Energetic Materials and Process Safety	244
<i>F. L. Wu, G. Li</i>	
Tutorial on Combustible Dust	245
<i>Timothy J. Myers</i>	
What Kind of Manager Am I?	264
<i>Terrence Robak</i>	
Clean and Cost Effective Hydrogen Production and Purification: A Zero Carbon Cycle	N/A
<i>Katherine Ayers</i>	
Nanofabricated Devices From Synkera: From Chemical Microsensors to Pilot-Scale Hydrogen Production	N/A
<i>Debra J. Deininger</i>	
Mesoporous Silicates As Flame Retardant Adjuvants	N/A
<i>Gerald P. Roston</i>	
Novel X-Ray Platform Technology for Non-Invasive Oil Concentration Analysis in Oil Well Applications	N/A
<i>Sivathanu Yudhaya</i>	
Electrochemistry to Transform Fluids and Power into Higher Value Forms - Poster	N/A
<i>Trent Molter</i>	
Beyond BPA-Free: Eliminating Endocrine Disruptors in Plastics - Poster	N/A
<i>Stuart Yaniger</i>	
Rapid Water Testing For Volatile Organic Compounds - Poster	N/A
<i>Mark C. Peterman</i>	
In Situ Sensors based on Perfluorinated Sensing Membranes - Poster	N/A
<i>Jonathan Thompson</i>	
Materials Development For Advanced Catalysts And Gas Sensors - Poster	N/A
<i>William J. Dawson</i>	
Commercial Success in Biomaterials - Poster	N/A
<i>Blake Mosher</i>	
Hydrophilic In-situ Nanocomposites for High Performance Acrylic Applications - Poster	N/A
<i>Brian Livengood</i>	
Biobased Materials (Plant Proteins) as Alternatives for Suspected Carcinogens and other Hazardous Chemicals in Large-Scale Manufacturing Processes - Poster	N/A
<i>Dara L. Woerdeman</i>	
Nanotechnology Enabling Composites: Superhydrophobic Surfaces to Electrical Transparent Conductors - Poster	N/A
<i>David Schultz</i>	
MTR's Experience with the SBIR Program: The Development of Vapor Separation Membranes - Poster	N/A
<i>Tim Merkel</i>	
Survival Techniques and Technologies of a Startup Specialty Polymer Company - Poster	N/A
<i>Earl H. Wagener</i>	
Synthesis of PVA Based Membranes Modified by Benzimidazole Group for Direct Methanol Fuel Cells	265
<i>Pratima Gajbhiye, Jayant K. Singh, Anil Kumar</i>	
Operation and Controls of Operating Direct Methanol Fuel Cells with PVA Based Membranes Modified by Benzimidazolium Groups	268
<i>Pratima Gajbhiye, Pranjali Joshi, Jayant K. Singh, A. Kumar</i>	
Numerical Investigation in Heat Conduction Effect on Heat Exchange for Mini Cross-Flow Heat Exchanger (MCHE)	271
<i>Hongyue Duan, Wei Mu, Xigang Yuan, Lingai Luo</i>	
The Effects of Out Gassing Through Cylindrical Walls on the Transport Coefficients	272
<i>Luma. H. Yaseen, Nada B. Nakkash, M. N. Latif</i>	

Down the Hubbert Curve	273
<i>Ian Sutton</i>	
Statistical Decision Making for In-Service Inspection of Underground Waste Storage Tanks	274
<i>Emily Mitchell, Stephen P. Harris</i>	
Thermal Inbreathing Requirements of Low Pressure Storage Tanks At Elevated Temperatures	275
<i>Donald E. Brooks</i>	
Dynamic Operational Risk Assessment with Bayesian Networks	276
<i>Shubharthi Barua, Xiaodan Gao, Sam Mannan</i>	
Comparing the Performance of Compact Heat Exchange Reactor to CSTR for Fischer Tropsch Synthesis	283
<i>Hani Gadalla, Zhijun Jia, Steven J. Vallee, Burtron H. Davis, Dennis Sparks</i>	
Process Safety Management Plus or Minus 20 Years - What I Wish I'd Known 20 Years Ago and What We Can't Wait Another 20 Years to Learn	284
<i>Alan C. Brackey</i>	
Major Turnaround in An Olefins Plant: A Process Safety Point of View	291
<i>Pablo Ricardo Barrera, Davi Roberto Ohlweiler, Luis Inácio Gré</i>	
Process Safety Management Mentoring: Subjects to Convey and the Methods for Conveying	300
<i>Clyde W. Young, Keith Hodges</i>	
Two Incompetent Workers; Too Close for Comfort - Part 1	313
<i>Mike Broadribb</i>	
Working Under Pressure (How Do You Manage Pressure Hazards?)	323
<i>Angela E. Summers, William Mostia Jr.</i>	
How to Safely Operate Multifunctional Pilot Plants - A Case Study At the Dow Chemical Co.	338
<i>Luiz Zacharias, Roger Painter</i>	
Author Index	