

# **Leadership Development - Professional Skills to Catalyze Your Career**

Topical Conference at the 2020 AIChE Spring Meeting and 16th  
Global Congress on Process Safety

Online  
17 - 21 August 2020

ISBN: 978-1-7138-2333-9

**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© (2020) by AIChE  
All rights reserved.

Printed with permission by Curran Associates, Inc. (2021)

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

AIChE  
120 Wall Street, FL 23  
New York, NY 10005-4020

Phone: (800) 242-4363  
Fax: (203) 775-5177

[www.aiche.org](http://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: 845-758-2633  
Email: [curran@proceedings.com](mailto:curran@proceedings.com)  
Web: [www.proceedings.com](http://www.proceedings.com)

## TABLE OF CONTENTS

|   |    |
|---|----|
| (1A) 2020 AICHE SPRING MEETING & 16TH GCPS AGILE AWARD KEYNOTE ADDRESS<br>- BEYOND THE HORIZON: THE FACTORS AND FORCES AFFECTING THE GLOBAL<br>PETROCHEMICAL INDUSTRY ..... | 1  |
| <i>Bhavesh V. (Bob) Patel</i>   |    |
| (16A) SECURING ENTERPRISES VIA CYBERSECURITY UNDERSTANDING,<br>RESILIENCY, AND EDUCATION .....  | 2  |
| <i>Matt Loeb</i>  |    |
| (6A) MANAGEMENT AND ALLYSHIP OF UNDERREPRESENTED GROUPS .....   | 3  |
| <i>Austin S. Lin, Gayle Gibson</i>  |    |
| (70A) HOW TO PIVOT IN YOUR CAREER.....  | 4  |
| <i>Alaina Levine</i>  |    |
| (36A) ENGINEERS AT THE WHEEL .....  | 5  |
| <i>Rui Cruz</i>   |    |
| (36B) LEADERSHIP IN CRISIS .....  | 6  |
| <i>Gretchen Lupher</i>  |    |
| (36C) TRAILBLAZING IN THE ENERGY INDUSTRY .....   | 7  |
| <i>Fatimah Bello</i>  |    |
| (89A) HOW TO NETWORK.....   | 8  |
| <i>Alaina Levine</i>  |    |
| (127A) HOW TO REDUCE CONFLICT TO KEEP YOUR JOB .....  | 9  |
| <i>Alaina Levine</i>  |    |
| (179A) WHEN DISASTERS HAPPEN: A COLLABORATIVE APPROACH TOWARDS THE<br>COMMUNITY'S RECOVERY PROCESS .....  | 10 |
| <i>Thomas Munoz</i>   |    |
| (80A) STARTING AND MAINTAINING A BUSINESS .....   | 11 |
| <i>Sunil Hangal</i>   |    |
| (80B) STARTING A CONSULTING BUSINESS: LESSONS LEARNED FROM 18 YEARS OF<br>BEING SELF-UNEMPLOYED.....  | 12 |
| <i>Michael Taube</i>  |    |
| (80C) TURNING A CALLING INTO AN AWARD WINNING BUSINESS.....   | 13 |
| <i>Daniel Hurst</i>   |    |
| (194A) UNCONSCIOUS BIAS: FOSTERING INCLUSIVE COMMUNITIES .....  | 14 |
| <i>Gary Bryan, Deborah L. Grubbe, Belinda Akpa</i>  |    |
| (91A) INDUSTRY-ACADEMIC COLLABORATION FOR THE TRANSITION TO A LOW<br>CARBON WORLD.....  | 15 |
| <i>Leonardo Spanu</i>   |    |
| (91B) USING OPEN INNOVATION TO DESIGN CHEMICAL PRODUCTS.....  | 16 |
| <i>Kevin Joback</i>   |    |

|   |    |
|---|----|
| (91C) NCERC AT SIUE: A HUB FOR OPEN INNOVATION IN BIOFUELS AND BIOPRODUCTS .....  | 17 |
| <i>Yan Zhang, Lash Terry</i>  |    |
| (172A) MINDFUL METHODS TO CREATE PROFOUND SHIFTS IN PERSONAL AND CORPORATE LIFE .....   | 18 |
| <i>Lisa Liszcz</i>  |    |
| (60A) PROCESS AND ADSORBENT FOR SEPARATING ETHANOL AND ASSOCIATED OXYGENATES FROM A BIOFERMENTATION SYSTEM.....   | 19 |
| <i>Deepak Sharma</i>  |    |
| (60B) PUMP SAFETY, THE UNDISCUSSED TOPIC IN CHEMICAL INDUSTRY LEADING TO SEVERAL FATAL INCIDENTS .....  | 20 |
| <i>Deepak Sharma</i>  |    |
| (60F) NEW KIND OF LINEAR NANOCOMPOSITE APPLIED IN IMPROVING RHEOLOGICAL BEHAVIOR OF CRUDE OIL AND ITS MECHANISM STUDIED THROUGH MOLECULAR SIMULATION METHOD ..... | 21 |
| <i>Zheng Peng, Wei Wang, Weijie Yu, Huirong Huang, Jing Gong</i>  |    |
| (60G) SOLAR ENERGY CONVERSION AND NOISE CHARACTERIZATION SENSING IN BUILDING INTEGRATED SOLAR PHOTOVOLTAIC DEVICES WITH VENTILATION .....                         | 22 |
| <i>Himanshu Dehra</i>   |    |
| (60H) STRUCTURAL CHARACTERIZATION AND MODEL REPRESENTATION OF VITRINITE-RICH INDIA COAL BY USING ADVANCED ANALYTICAL TECHNIQUES .....                             | 23 |
| <i>Yash Jaiswal, Sunderlal Pal</i>  |    |
| (60K) LIFE MANAGEMENT OF HIGH ENERGY PIPING WITH HIGHLIGHTS FROM ASME B31.1 .....   | 24 |
| <i>Ben Ruchte, Wendy Weiss</i>  |    |
| (60O) OPTIMIZATION OF C3MR LNG LIQUEFACTION PROCESS USING A PARALLELIZED SIMULATOR .....  | 25 |
| <i>Trevor Rice, Yoshitsugi Kikkawa, Mingder Lu</i>  |    |
| (60P) MODIFYING FISCHER-TROPSCH REACTION SEQUENCE WITH ADDITION OF ZEOLITE TO IRON-BASED ACTIVATED-CARBON SUPPORTED CATALYST .....                                | 26 |
| <i>Avinashkumar Karre</i>   |    |
| (60T) LATERAL RETENTION FORCE REQUIRED FOR SLIDING SALINE DROPLETS OVER SILANIZED SILICON SURFACE .....   | 27 |
| <i>Yagna Valkya Reddy Bhimavarapu, Appu Vinod, Akash Jena, Rafael Tadmor</i>  |    |
| (60U) STUDY OF DROPLET MOTION ACROSS POLYMERIC SUBSTRATES BY CENTRIFUGAL ADHESION BALANCE (CAB) .....   | 28 |
| <i>Akash Jena, Yagna Valkya Reddy Bhimavarapu, Appu Vinod, Sirui Tang, Rafael Tadmor</i>  |    |
| (60W) POPULATION BALANCE MODELING AND SPATIALLY-ORIENTED CONTROL FOR CRYSTAL SIZE AND SHAPE IN CRYSTALLIZATION PROCESSES .....                                    | 29 |
| <i>Marcellus G. F. De Moraes, Martha A. Grover, Argimiro Resende Secchi, Maurício B. De Souza Jr., Paulo L. C. Lage</i>   |    |

|  |    |
|--|----|
| (60AE) AUDITING THE PROCESS HAZARD ANALYSIS - KEY CHARACTERISTICS TO SCRUTINIZE IN A GOOD-QUALITY HAZOP STUDY AND SUPPORTING EFFECTIVE HAZOP STUDY UPDATES .....         | 31 |
| <i>Steven T. Maher</i>   |    |
| (60AF) DEVELOPMENT OF HIGH PERFORMANCE ORGANIC-BASED CATHODES .....  | 32 |
| <i>Sarwan S. Sandhu, Joseph P. Fellner</i>   |    |
| (60AK) ELECTROCHEMICAL KINETICS OF DEGRADATION OF GRAPHITE ANODES IN LITHIUM ION BATTERIES.....  | 33 |
| <i>Supratim Das, Martin Z. Bazant</i>  |    |
| (60AU) MODEL DEVELOPMENT OF SOLID OXIDE FUEL CELL THERMAL PERFORMANCE USING ARTIFICIAL NEURAL NETWORK .....  | 35 |
| <i>Mohammad Biswas, Kamwana Mwara</i>  |    |
| (60AW) IMPACT OF SPACER NATURE ON RHEOLOGICAL PROPERTIES OF CATIONIC GEMINI SURFACTANT .....   | 36 |
| <i>Shams Kalam, Muhammad Shahzad Kamal, Shirish Patil, S. M. Shakil Hussain</i>  |    |
| (60AX) REAL TIME ENERGY MANAGEMENT SYSTEMS IMPLEMENTATION FOR CONTINUALLY OPTIMIZED PERFORMANCE.....   | 37 |
| <i>Pablo Montagna</i>  |    |
| (60AN) ANALYSIS OF FUEL CELL SYSTEM THROUGH PROJECT BASED LEARNING FOR APPLICATION OF CLASSICAL THERMAL FLUID CONCEPTS IN MECHANICAL ENGINEERING LABORATORY COURSE ..... | 38 |
| <i>Mohammad Biswas</i>   |    |
| (60BD) MEASURED VERSUS CALCULATED SOUR GAS PROPERTIES .....  | 39 |
| <i>Nasrin Nasimi</i>   |    |
| (60BL) THE STUDY OF A S-CO <sub>2</sub> OXY-FUEL COMBUSTION POWER PLANT FOR LOW GRADE COALS .....  | 40 |
| <i>Hyung Woo Kim, Su Been Seo, Seo Young Kang, Eun Sol Go, See Hoon Lee</i>  |    |
| (60BM) CHARACTERIZATION AND PERFORMANCE ASSESSMENT OF OIL ENTRAPMENT BY COMMERCIALY AVAILABLE SURFACTANTS.....   | 41 |
| <i>Julia Siqueira, Lauren Ritz, Shuchen Li, Curtis W. Jarand, Wayne F. Reed</i>  |    |
| (60BN) DESIGNING A NATIVE MODEL FOR ASSESSMENT OF THE EFFECTIVENESS OF ADVERTISING .....   | 42 |
| <i>Sorush Niknamian</i>  |    |
| (60BO) STUDY OF NATURAL ANTIOXIDENT INHIBITORS FOR CORROSION PROTECTION OF MILD STEEL IN ACIDIC MEDIUM.....  | 78 |
| <i>Ibtihal Albahrani</i>   |    |
| (60BP) VERIFICATION OF FIREFIGHTERS' HEURISTICS AND PREDICTIVE MODEL DEVELOPMENT THROUGH BIG DATA ANALYSIS.....  | 87 |
| <i>Sohyeon Park, Eunji Shin, Dongil Peter Shin, Jeonghoon Park</i>   |    |
| (60BT) CONVERTING SHELTER-IN-PLACE LOCATIONS TO ZERO VULNERABILITY SAFE HAVENS .....   | 88 |
| <i>James Rau, Ashlee Young, Meghan McDermott</i>   |    |

|   |     |
|---|-----|
| (60BW) HOW THE FIELD OF HUMAN FACTORS HELPS SOLVE THE RIDDLE OF SERIOUS INJURIES AND FATALITIES .....   | 102 |
| <i>Chason Coelho, Sunil Lakhiani, Delmar Trey Morrison</i>  |     |
| (60BX) INITIAL CONDITIONS USED IN ATMOSPHERIC DISPERSION MODELS:ISSUES WITH COMMONLY USED ASSUMPTIONS FOR GAS JETS AND PLUMES .....   | 103 |
| <i>Thomas O. Spicer III, Chad T. Smith</i>  |     |
| (60BZ) FAULT TREE UNCERTAINTY ANALYSIS.....   | 104 |
| <i>Raymond Randy Freeman</i>  |     |
| (60CD) MAKING THE MOST OF YOUR PHA .....  | 134 |
| <i>Steven T. Maher, Morgan McVey</i>  |     |
| (60CN) THEORETICAL ANALYSIS OF THE VIABILITY OF ISOPROPANOL-CYCLOHEXANE SOLVENT SYSTEMS FOR BIOMATTER LIPID EXTRACTION.....   | 135 |
| <i>Kyle Zappi</i>   |     |
| (60CO) TECHNO-ECONOMIC ANALYSIS OF THE CONVERSION OF CH <sub>4</sub> AND CO <sub>2</sub> INTOACETIC ACID USING MICROWAVE PLASMA .....   | 136 |
| <i>Abdulrahman S. Alsuhaibani, Marco Avendano, Mahmoud El-Halwagi</i>   |     |
| (60CQ) MODEL PREDICTIVE CONTROL DESIGN FOR THE ALLAM POWER PLANT INTEGRATED WITH AN AIR SEPARATION UNIT.....  | 137 |
| <i>Dan Fernandes, Md Emdadul Haque, Song Wang, Daniel Chen, Srinivas Palanki</i>  |     |
| (60CR) EXPLORE THE FUNCTION OF ION-EXCHANGE MEMBRANE (IEM) IN MEMBRANE CAPACITIVE DEIONIZATION (MCDI) CELL, AN ALTERNATIVE TECHNIQUE IN BRACKISH WATER DESALINATION FIELD ..... | 138 |
| <i>Xin Zhang, Danny Reible</i>  |     |
| (60CT) AN INTEGRATED PROCESS FOR THE PRODUCTION OF PROPYLENE GLYCOL FROM SHALE GAS .....  | 139 |
| <i>Md Emdadul Haque, Namit Tripathi, Qiang Xu, Srinivas Palanki</i>   |     |
| (60DC) MONITORING METHODS FOR FAULT DETECTION AND DIAGNOSIS: ALGORITHMS AND APPLICATIONS .....  | 140 |
| <i>M. Ziyen Sheriff</i>   |     |
| (60DE) SELECTIVE SEPARATION OF INDUSTRIAL RELEVANT METAL IONS FROM HIGH TDS WATER USING WAFER-ENHANCED ELECTRODEIONIZATION (WE-EDI) .....                                       | 141 |
| <i>Humeyra B. Ulusoy Erol</i>   |     |
| (60DF) INFLUENCE OF PARTICLES ON AMINE LOSSES DURING CO <sub>2</sub> CAPTURE: A PROCESS SIMULATION COUPLED AEROSOL DYNAMICS MODEL _ .....                                       | 142 |
| <i>David Dhanraj</i>  |     |
| (34A) YAY! I'M A MANAGER...NOW WHAT?.....   | 144 |
| <i>Teresa A. Jurgens-Kowal</i>  |     |
| (34C) SUCCESSFULLY NAVIGATING GENERATIONAL DIFFERENCES .....  | 145 |
| <i>Lori McDowell</i>  |     |
| (122A) STEPS TO BECOME A PE AND WHAT EXACTLY DOES IT MEAN.....  | 156 |
| <i>Joseph Cramer</i>  |     |

|   |     |
|---|-----|
| (122B) THE FUTURE OF BADGES, CREDENTIALS AND LICENSES .....   | 161 |
| <i>Deborah L. Grubbe, Pe</i>  |     |
| (122C) CREDENTIALS, CERTIFICATES AND AICHE RELATED EDUCATIONAL<br>PROGRAMS .....  | 162 |
| <i>Darlene Schuster, Rukyah Hennessey</i>   |     |
| (54A) IN BUSINESS NO DOESN'T ALWAYS MEAN NO, DIG DEEPER .....   | 163 |
| <i>Lori McDowell</i>  |     |
| (54C) LEAD IT! TOOLS AND STRATEGIES FOR EFFECTIVE TECHNICAL PROJECT<br>LEADERSHIP FROM A SLIGHTLY SEASONED PROFESSIONAL ..... | 164 |
| <i>Eldad Herceg</i>   |     |
| (222A) THE ESSENTIAL ROLE OF PROFESSIONAL CHEMICAL ENGINEERS IN EXPORT<br>CONTROL .....                                       | 165 |
| <i>William Rhodes</i>   |     |
| (222B) PERSONAL PERSPECTIVES OF A PRACTITIONER ON CREDENTIALING AND<br>LICENSING .....  | 166 |
| <i>Denise Chastain-Knight</i>   |     |
| (2A) COMMUNITY OF MENTORING.....  | 167 |
| <i>William Docter</i>   |     |
| (2B) A CHEMICAL ENGINEER AMONG THE ROBOTS.....  | 168 |
| <i>Twain Pigott</i>   |     |
| (240A) WOMEN IN CHEMICAL ENGINEERING (WIC) PRESENT A LEADERSHIP<br>DISCUSSION WITH CAMILLE BATISTE .....                      | 169 |
| <i>Camille Batiste</i>  |     |

**Author Index**