6th International Congress on Sustainability Science and Engineering (ICOSSE'17)

Barcelona, Spain 2 - 4 October 2017

ISBN: 978-1-5108-7283-7

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© (2017) by AIChE All rights reserved.

Printed by Curran Associates, Inc. (2018)

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

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 Web: www.proceedings.com

TABLE OF CONTENTS

SESSION 1: THE TRANSITION TO SUSTAINABLE LIVING 1	
Manufacturing Sustainability: Multiscale Systems Science and Applied Studies	N/A
Yinlun Huang Delivering Resource Projects Sustainably in Emerging Economies: The Success Story of an	
Innovative Business Intervention Model	
Jim Petrie, Lauren Basson, Mike Mulcahy	
Sustainability of Solar PV Systems for Electricity Generation	
Towards Sustainable Operations in Chemical Plants	N/A
Total Water Sustainability Management for China & World	10
SESSION 2: THE TRANSITION TO SUSTAINABLE LIVING 2	
Sustainability Education Approaches for Lifelong Learning. Are We There Yet?	28
A New Decision-Support Framework for Integrating Circular Economy Principles Into Business Practice	39
Joan Fernandez Mendoza, Alejandro Gallego Schmid, Adisa Azapagic	
Professional Development and Lifelong Learning for Sustainability	
Transitioning to Sustainability: Energy Security and Risk	
Integrated Design and Analysis of Local Food-Energy-Water Systems	N/A
SESSION 3: SUSTAINABLE TECHNOLOGIES 1	
SESSION 3. SESTIMANDEL TECHNOLOGIES I	
Life Cycle Assessment of high-temperature carbonate loop for CO2 capture in the Czech Republic	49
Handling Multi-Scale/Multi-Partner Information for Biorefinery Modelling, Integration and	
Sustainability Assessment	60
Mathias Janssen, Elin Svensson, Stavros Papadokonstantakis Multi-objective Optimization of Fermentation and in Situ Gas Stripping Processes Based on	
Timedependent Fermentation Models	N/A
Kwabena Darkwah	
Algae as an Animal Feed Supplement: Nutrient Recovery and Water Reuse	66
Sage R. Hiibel, Antonia P. Faciola, M.Toufiq Reza, Charles J. Coronella Systematical Applications and Pages in Treatment (SMART) of Water and Environment	NT/A
Sustainable Material Applications and Reuse in Treatment (SMART) of Water and Environment	IN/A
PEI-aided Dispersion of Ni Nanoparticles in Mesoporous Silica for Dry Reforming of Methane	N/A
SESSION 4: SUSTAINABLE TECHNOLOGIES 2	
DEBOTOR T. BOSTARIADDE LECHNOLOGIES 2	
Implementing the Paris Agreement: Key Challenges and Opportunities for Chemical Engineering	N/A
Economic and Environmental Assessment of Bagasse Utilization for Ethanol Production in India	N/A
A High Pressure Jet Device As a Novel Technology for Reduction of Excess Activated Sludge:	
Performance, Mechanism and Cost Estimation	N/A

Masaaki Hosomi

Towards a More Sustainable Management of Desalination Brines	
ICOSSE PLENARY LECTURE – RENATE CHRIST	
Climate Change Science, the Paris Agreement and the Sustainable Development Goals	N/A
SESSION 5: BRINGING SUSTAINABILITY TO THE MAINSTREAM 1	
Demand Trumps Policy: Bioenergy Project Experience in South Africa	92
Sustainability Measurements applied for Optimization and Synthesis of Different Systems	N/A
Exploring the Relationship between Product Environmental Sustainability and Consumer Use	N/A
Hybridization of Integrated Model Used for Sustainability Assessment	103
From Linear to Circular Integrated Waste Management Systems: a Framework	113
SESSION 6: BRINGING SUSTAINABILITY TO THE MAINSTREAM 2	
Multi-lifecycle Product Design Optimization Considering Reuse, Remanufacturing and Recycling	N/A
Life Cycle Assessment of Dairy Derivatives: Towards an eco-design of the pasteurization process	N/A
Sustainability Function Deployment: Using QFD to create socioeconomic value	N/A
Methodologies for Life Cycle Inventory Generation for Active Pharmaceutical Ingredients (APIs)	N/A
Electrochemical Reduction Of CO2 To Formate: A New Zerogap Electrochemical Reactor Approach	N/A
ICOSSE PLENARY LECTURE – JACQUELINE CRAMER	
Circular Cities - The Case of the Amsterdam Metropolitan Area	N/A
SESSION 7: BRINGING SUSTAINABILITY TO THE MAINSTREAM 3	
Insights from modeling to support policy development and decision making in South Africa	N/A
Data Analysis of Global Waste Plastic Generation and Management	N/A
Assessing the sustainability of community-based water purification technologies: a case study in West Bengal	N/A
Richard Darton Characterization and Analysis of the Sustainability in the Forest Supply Chain	
Andreia Santos Accounting for the indirect environmental burdens in waste to energy flue gas cleaning	
Alessandro Tugnoli Author Index	1VA