Table of Contents

Preface.................................................................................................................................................. xv

Chapter 1
ADMET: Functionalized Polyolefins...................................................................................................... 1
   Taylor W Gaines, University of Florida, USA
   Kathryn R. Williams, University of Florida, USA
   Kenneth Boone Wagener, University of Florida, USA

Chapter 2
Advances in Catalytic Technologies for Selective Oxidation of Lower Alkanes ......................... 22
   Srikant Gopal, SABIC Technology Center, Saudi Arabia
   Mohammed H Al-Hazmi, SABIC Technology Center, Saudi Arabia

Chapter 3
Palladium in Heterogeneous Oxidation Catalysis............................................................................. 53
   Andreas Martin, Leibniz-Institute for Catalysis, Germany
   Venkata Narayana Kalevaru, Leibniz-Institute for Catalysis, Germany
   Jörg Radnik, Leibniz-Institute for Catalysis, Germany

Chapter 4
Production of Ethylene and its Commercial Importance in the Global Market............................. 82
   Ahmad Alshammari, King Abdulaziz City for Science and Technology, Saudi Arabia
   Venkata Narayana Kalevaru, Leibniz Institute for Catalysis, Germany
   Abdulaziz Bagabas, King Abdulaziz City for Science and Technology, Saudi Arabia
   Andreas Martin, Leibniz Institute for Catalysis, Germany

Chapter 5
Membrane Engineering and its Role in Oil Refining and Petrochemical Industry ........................ 116
   Adele Brunetti, Institute on Membrane Technology, ITM-CNR, Italy
   Miriam Sellaro, Institute on Membrane Technology, ITM-CNR, Italy
   Enrico Drioli, Institute on Membrane Technology, ITM-CNR, Italy
   Giuseppe Barbieri, Institute on Membrane Technology, ITM-CNR, Italy
Chapter 6
Sustainable Process Integration in the Petrochemical Industries .......................................................... 150
  Hisham S Bamufleh, King Abdulaziz University, Saudi Arabia
  Mohamed M.B. Noureldin, Texas A&M University, USA
  Mahmoud M. El-Halwagi, Texas A&M University, USA

Chapter 7
Safety and Efficiency Enhancement in LNG Terminals ........................................................................... 164
  Ravinder Singh, Lamar University, USA
  Helen Huiru Lou, Lamar University, USA

Chapter 8
Advances in Catalytic Conversion of Syngas to Ethanol and Higher Alcohols ................................. 177
  Jie Sun, Xiamen University, China
  Shaolong Wan, Xiamen University, China
  Jingdong Lin, Xiamen University, China
  Yong Wang, Pacific Northwest National Laboratory, USA

Chapter 9
  Hamid Audah AlMegren, King Abdulaziz City for Science and Technology, Saudi Arabia
  Sergio Gonzalez-Cortes, Oxford University, UK
  Yu Huang, Guangzhou Boxenergy Tech Ltd, China
  Haoyi Chen, Guangzhou Boxenergy Tech Ltd, China
  Yangdong Qian, Oxford University, UK
  Mohammed Alkinany, King Abdulaziz City of Science and Technology, Saudi Arabia
  Saud Aldrees, King Abdulaziz City of Science and Technology, Saudi Arabia
  Tiancun Xiao, Oxford University, UK

Chapter 10
Desulphurization of Fuel Oils Using Ionic Liquids ............................................................................... 254
  Abdul Waheed Bhatto, Dawood University of Engineering and Technology, Pakistan
  Rashid Abro, Beijing University of Chemical Technology, China
  Tauqeer Abbas, COMSATS Institute of Information Technology, Pakistan
  Guangren Yu, Beijing University of Chemical Technology, China
  Xiaochun Chen, Beijing University of Chemical Technology, China

Chapter 11
Catalysis with Room Temperature Ionic Liquids Mediated Metal Nanoparticles .............................. 285
  Youquan Deng, Lanzhou Institute of Chemical Physics, Chinese Academy of Sciences, China
  Shimin Liu, Lanzhou Institute of Chemical Physics, Chinese Academy of Sciences, China
Chapter 12
Kinetic Models for Complex Parallel–Consecutive Reactions Assessment of Reaction Network and Product Selectivity ................................................................. 330
   Hamdy Farag, Kyushu University, Japan & Mansoura University, Egypt
   Masahiro Kishida, Kyushu University, Japan

Chapter 13
Valorisation of Glycerol to Fine Chemicals and Fuels .................................................. 352
   Nikolaos Dimitratos, Cardiff University, UK
   Alberto Villa, Università degli Studi di Milano, Italy
   Carine E. Chan-Thaw, Università degli Studi di Milano, Italy
   Ceri Hammond, Cardiff University, UK
   Laura Prati, Università degli Studi di Milano, Italy

Chapter 14
Dual Role of Perovskite Hollow Fiber Membrane in the Methane Oxidation Reactions ........... 385
   Serbia M. Rodulfo-Baechler, University of Newcastle, UK

Chapter 15
Preparation, Characterization and Desulfurization of the Supported Nickel Phosphide Catalysts .............................................................................................................................................. 431
   Zhoujun Wang, Beijing University of Chemical Technology, China
   Pingyi Wu, Beijing University of Chemical Technology, China
   Ling Lan, PetroChina, China
   Shengfu Ji, Beijing University of Chemical Technology, China

Compilation of References ............................................................................................................ 459

About the Contributors .................................................................................................................. 527

Index ................................................................................................................................................... 537