



Recent advancements in chemical, environmental, and energy engineering acronym: RACEEE 2019

B. Ambedkar¹ · K. Jagannathan¹ · J. Dhanalakshmi¹ · Eldon R. Rene² · R. Anantharaj¹

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The field of chemical engineering still has process optimization problems in terms of economics and life cycle analysis of the different unit operations. In some industrial cases, the molecular perspective of looking at the problem is increasingly important in the refinement of kinetic and thermodynamic modeling. Keeping this background in mind, the 4th International Conference on Recent Advancements in Chemical, Environmental, and Energy Engineering (RACEEE 2019) was organized by academics and researchers belonging to various scientific areas of chemical, environmental, and energy engineering and its allied fields. The conference was created as an international forum for academics, researchers, and scientists from worldwide by discussing and exchanging knowledge about the issues, remedies, and demands related to chemical, environmental, and energy engineering. The conference was organized by B. Ambedkar, J. Dhanalakshmi, and R. Anantharaj. The theme of the RACEEE-2019 conference was to “ignite, inspire, and innovate novel technology in chemical, environmental, and energy engineering for sustainable future development,” to promote young minds and their research abilities by providing an international platform to interact with the experts in the field of chemical, environmental, and energy engineering. This event was planned in such a way that it can explore and enlighten

different applications in following fields: chemical reaction engineering, process control strategies, process safety and optimization, food processing technology, CO₂ capture processes, solvent regeneration techniques, renewable and non-renewable energy, energy conservation, and different waste to energy technologies.

The conference brought together 9 eminent speakers, ~190 participants, scientific writing tutorial participants, and also participants from the industrial background. The keynote speakers addressed all the current and future development challenges in the field of chemical, energy, and environmental engineering, across the global context. The papers published in this special issue will provide valuable networking opportunity and set the stage for further cooperation among professionals. The guest editors of this RACEEE-2019 issue are thankful to the Editor-in-Chief of Environmental Science and Pollution Research (ESPR), Prof. Philippe Garrigues, for providing an opportunity to publish selected peer-reviewed papers that were presented at RACEEE-2019. Our special thanks to Ms. Fanny Creusot and Ms. Florence Delavaud, Editorial Assistants of ESPR, and the entire production team at Springer for their valuable support in bringing out this issue successfully. The guest editors firmly believe that the special issue papers will be a useful reading document to your research group, and we wish you all the very best.

Responsible Editor: Philippe Garrigues

✉ Eldon R. Rene
e.raj@un-ihe.org

¹ Department of Chemical Engineering, SSN College of Engineering, Chennai, Tamil Nadu 603110, India

² Department of Environmental Engineering and Water Technology, IHE Delft Institute for Water Education, Westvest 7, 2611 AX Delft, The Netherlands

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B. Ambedkar (PhD) is working as an Associate Professor in the Department of Chemical Engineering, SSN College of Engineering, Chennai, since June 2014. Prior to joining SSN, he did his postdoctoral research at the UK Center for Applied Energy Research, Kentucky, USA, in the area of post-combustion enzyme-catalyzed carbon dioxide (CO₂) capture systems. During his doctoral dissertation, Dr. Ambedkar received the Springer outstanding PhD thesis award for developing a high through

output novel ultrasonic process for cleaning of high sulfur and high ash coal. Dr. Ambedkar also has two patents on “microwave and megasonics assisted carbon rich solvent regeneration techniques in PCCC” and three external research grants worth ₹ 2.57 crores from the DST-SERB, India.



Eldon R. Rene (PhD) is currently working as a Senior Lecturer at IHE Delft, Institute for Water Education, The Netherlands. He obtained his University Teaching Qualification (UTQ) diploma from IHE Delft and a PhD in Chemical Engineering from the Indian Institute of Technology Madras (India). Eldon’s broad research interests are related to the development of biological treatment processes for wastewater and waste-gas treatment, resource recovery, and the use of artificial

intelligence tools for environmental monitoring and environmental process control. As a part of his educational and capacity building efforts, Eldon has taught scientific writing and skill development to ~3000 MS and PhD students in major international events or workshops held in 28 countries.



K. Jagannathan (PhD) is currently working as an Associate Professor in the Department of Chemical Engineering, SSN College of Engineering, Chennai, India. He has over 20 years of teaching and research experience. He has published over 65 research papers in various international journals and conference proceedings, besides a couple of book chapters. He has also received a couple of innovative research awards and filed a patent and three copyrights/IPR. As a principal

investigator, he has successfully completed 4 externally funded research projects while working in Malaysia with a fund value about ₹10 million and involved in 11 other research projects as a co-investigator.



R. Anantharaj (PhD) is an Associate Professor of Chemical Engineering at SSN College of Engineering, Chennai. He has published more than 80 research articles in the field of development of zero emission process for the reduction of CO_x, SO_x, and NO_x from industrial processes and the combustion of fossil fuels using ionic liquids and deep eutectic solvents. He received a start-up research grant under the young scientist scheme in 2016 from DST-SERB, New Delhi.

He also received the young scientist award in chemical engineering in the year 2017 from the Institution of Engineers, India.



J. Dhanalakshmi (PhD) is working as an Associate Professor in the Department of Chemical Engineering, SSN College of Engineering, Chennai, since March 2015. She received her PhD degree from IIT Madras in the year 2014. She is the recipient of the IIT Madras Travel Grant (2012) for abroad conference (USA). As a principal investigator, she has received one external research grant worth ₹ 27 lakhs from DST-SERB (early career research award), India. Dr.

Dhanalakshmi has a patent on “megasonics assisted carbon rich solvent regeneration techniques in PCCC,” and she has contributed to numerous research publications in SCI-indexed journals.