

Preface

Special Issue on Innovative Applications of Membranes/Bioreactors and Fouling Models

“Challenges in Environmental Science & Engineering”, CESE International Conference Series is an annual event initiated by Associate Professor Jega V. Jegatheesan and Dr. Li Shu both of whom are currently attached to Deakin University, Australia. Researchers, policy-makers, academics, students and the broader community active in contributing solutions to the myriad of environmental questions posed by the challenges facing environmental sustainability are the consistent participants of CESE series.

CESE Series aims at making significant contribution to “Sustainable Growth” and this could only be possible if scientists and engineers were worked together to pave way for further interactions with other stakeholders in order to find paths for complete solutions. Sustainable growth could only be achieved if the complex interactions among many processes were understood and the sustainability is considered in all those processes. Sustainability of fresh water and other resources as well as energy should be emphasized for sustainable growth. Better management of catchments and the application of cleaner production in all industries are important criteria for the sustainability of fresh water and other resources. Sustainability of energy depends on innovative applications of renewable energy sources.

When applying membranes for treatment processes it is important to understand the role that membrane materials and membrane pore sizes are going to play. How would they affect the performance of the membrane in terms of retaining the pollutants and how well they resist the fouling are two major factors in deciding whether the application of membrane will be acceptable or not. Articles 1 and 2 describe those aspects under different applications of membranes. Modeling the fouling through computational fluid dynamics is discussed in article 3. Article 4 discusses the application of membrane in bioreactors to remove nutrients. The results are very promising and the treatment technology proposed in this article has great potential to be considered as an on-site treatment system and the treated wastewater could be reused for specific purposes. Article 5 describes a different biological treatment system to treat wastewater to higher standards. Thus, this special issue contains five interesting articles which can form a mini forum for further discussions.

Wenshan Guo, Chia-Yuan Chang, Li Shu and Veeriah Jegatheesan
Special Issue Guest Editors