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Green Photocatalysts

Springer

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Preface

> Water is one of the most important substances on earth. All plants and animals must have water to survive. If there was no water there would be no life on earth. (WHO report)

The industrial and population growth is affecting our water body system. Especially, the wastage and hazardous and toxic chemical from the leather, textile, and pharmaceutical industries are spoiling our water resource. In this connection, "photocatalyst" is one of the finest green technologies to remove the contaminations from the water bodies. This method has numerous advantages including safe, clean, cost-effective, suitable, and green method for effective degradation of water contaminations. This book contains ten chapters; first two chapters described the general principle, definition, synthesis of green catalysts, description, chemical reaction, and mechanism of photocatalyst. The remaining chapters of this book deal with the depth analysis of photocatalyst technology using different catalysts such as:

(i) Nanostructured catalysts
(ii) Semiconductors and metal- and nonmetal-doped catalyst
(iii) Surface plasmon materials
(iv) Graphene oxide-based materials
(v) Polymer-based composite materials
(vi) Heterogenous type I and type II catalysts

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Dr. Mu. Naushad is presently working as an associate professor in the Department of Chemistry, College of Science, King Saud University (KSU), Riyadh, Kingdom of Saudi Arabia. He obtained his M.Sc. and Ph.D. in Analytical Chemistry from Aligarh Muslim University, Aligarh, India, in 2002 and 2007, respectively. He has a vast research experience in the fields of Analytical Chemistry, Materials Chemistry, and Environmental Science. He holds several US patents, over 250 publications in the international journals of repute, 20 book chapters, and several books published by renowned international publishers. He has >7200 citations with a Google Scholar h-index of >52. He has successfully run several research projects funded by the National Plan for Science and Technology (NPST) and King Abdulaziz City for Science and Technology (KACST), Kingdom of Saudi Arabia. He is the editor/editorial member of several reputed journals like *Scientific Reports* (Nature), *Process Safety and Environmental Protection* (Elsevier), *Journal of Water Process Engineering* (Elsevier), and *International Journal of Environmental Research and Public Health* (MDPI). He is also the associate editor for *Environmental Chemistry Letters* (Springer) and *Desalination and Water Treatment* (Taylor and Francis). He has been awarded the Scientist of the Year Award 2015 by the National Environmental Science Academy, New Delhi, India, Scientific Research Quality Award 2019, King Saud University and Almarai Award 2017, Saudi Arabia.

Dr. Saravanan Rajendran has received his Ph.D. in Physics-Material Science in 2013 from the Department of Nuclear Physics, University of Madras, Chennai, India. He was awarded the University Research Fellowship (URF) during the year 2009–2011 by the University of Madras. After working as an assistant professor in Dhanalakshmi College of Engineering, Chennai, India, during the year 2013–2014, he was awarded SERC and CONICYT-FONDECYT Postdoctoral Fellowship, University of Chile, Santiago, Chile, in the year 2014–2017. He has worked (2017–2018) in the research group of Professor John Irvine, School of Chemistry, University of St Andrews, UK, as a postdoctoral research fellow within the framework of an EPSRC Global Challenges Research Fund for the removal of blue-green

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Dr. Eric Lichtfouse (Ph.D.) born in 1960, is an environmental chemist working at the University of Aix-Marseille, France. He has invented carbon-13 dating, a method allowing to measure the relative age and turnover of molecular organic compounds occurring in different temporal pools of any complex media. He is teaching scientific writing and communication and has published the book *Scientific Writing for Impact Factor Journals*, which includes a new tool – the micro-article – to identify the novelty of research results. He is founder and chief editor of scientific journals and series in environmental chemistry and agriculture. He got the Analytical Chemistry Prize by the French Chemical Society, the Grand Prize of the Universities of Nancy and Metz, and a Journal Citation Award by the Essential Indicators.

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