Editorial

Binoy K. Saikia

Polymer Petroleum and Coal Chemistry Group,
Materials Science and Technology Division,
CSIR – North East Institute of Science and Technology,
Jorhat, 785006, Assam, India
Email: bksaikia@neist.res.in
and
Academy of Scientific and Innovative Research,
CSIR-NEIST Campus,
Jorhat, 785006, India
Email: bksaikia@gmail.com

Biographical notes: Binoy K. Saikia is a Scientist in CSIR-North East Institute of Science and Technology, India and a Fellow of Geological Society of India. Educated in Don Bosco School, Sarupathar, Assam, India, he earned his MSc in Chemistry and PhD in Chemistry from the Dibrugarh University (India). He served as a Scientific Assistant at Tezpur University and Quality Control Officer at Indian Oil. His research field includes coal chemistry, coal beneficiation, nano-mineralogy, value addition to low-grade coal, and carbon nanomaterials. He has published 65 research papers, five book chapters, and edited three journal special issues on coal chemistry related topics. He is a recipient of Dr RP Bhatnagar Award for Mineral Beneficiation, Mineral Engineering Association of India Award, and IIME-Coal Beneficiation Award.

At first, I must thank Prof. M.R. Riazi, Editor-in-Chief, *International Journal of Oil Gas and Coal Technology* (*IJOGCT*) for immediately accepting my proposal for a special issue on 'Recent progress in clean coal research'. The publication of this special issue is primarily intended to compile some of the best and recent coal research which will show a way forward in doing further coal R&D.

Coal is one of the most affordable and abundantly available fossil fuels. It has been utilised in the generation of electricity through combustion around the world. However, coal is a complex substance with heterogeneous chemistry, mainly composed of carbon, hydrogen, nitrogen, sulphur, oxygen, and mineral matter, along with potentially hazardous elements. Due to increasing concerns associated with the emissions generated from coal combustion, clean coal technologies are utmost importance and essential to limit many of these harmful emissions. Thus, coal must be utilised effectively and sustainably in order to protect our environment. Clean coal research is being carried out to minimise the environmental impact of coal utilisation towards energy generation. In general, clean coal may be refereed as the treated coal with lesser pollutants to the environment.

This volume contains 15 research papers in the field of recent coal science and technology research. It includes some of the most important and recent issues related to the gainful utilisation of coal resources around the world: geochemistry of super high-organic-sulphur coal, carbonate melt-based desulphurisation of flue gas,

petrochemical evaluation of coal, desulphurisation of organic sulphur from coal, molecular level structure of coal, microwave-assisted extraction of coal, co-gasification of coal, and plasma gasification of coal are some of the attractive areas covered in this special issue. The papers address the significantly important areas of coal research relevant to academic as well as industrial interest. We believe that the issue will serve as a timely contribution to the coal research community in present context. The topic covered such as carbonate melt-based desulphurisation, petrochemistry of coal, molecular level structure of coal, microwave-assisted coal extraction, and plasma gasification will lead the future coal research among us.

In this issue, we also aimed to cover different topics of clean coal research including coal mining processes. The contributions focus on various issues related to resource quality assessment and advancement in processing, beneficiation, and utilisation technologies of coal around the world. We also have an emphasis on the value addition of low-quality coal, coal-related environmental issues, and efficient utilisation of coal waste/by-products, such as coal-combustion fly ash management. The research papers published are forward-looking and the special issue will have a broader impact on the coal research communities.

I would like to express my thankful appreciation to my friends, colleagues, collaborators, students, and well-wishers who offered me constant inspiration, motivation, and support during the project. I must express my gratitude to all the esteemed reviewers across the world for their comments to improve the papers. Special thanks to the journal management team of *IJOGCT* for their assistance in preparing the issue.