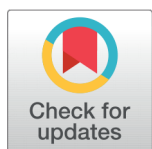


Preface to Special Issue on “WEmpower Pakistan in Materials Science Research of SDGs”



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As per United Nations (UN) “Sustainable consumption and production are about promoting resource and energy efficiency, sustainable infrastructure, and providing access to basic services, green and decent jobs and a better quality of life for all. Its implementation helps to achieve overall development plans, reduce future economic, environmental and social costs, strengthen economic competitiveness, and reduce poverty”.² To ensure sustainable development, the UN has set 17 goals ranging from zero hunger to economic development to clean water and more. Science and technology are the keys to meeting most of these goals. Materials Science can play an important role in meeting the sustainable development goals outlined by the UN. Materials are becoming increasingly important for energy, food, health and pollution control, which are the key elements of sustainable development.

WEmpower Pakistan is pleased to publish a special issue entitled “WEmpower Pakistan in Materials Science research on sustainable development goals (SDGs)” as defined by the United Nation. This special issue was edited by a group of mentors including Dr. Sofia Javed, Dr. Faryal Idrees, Dr. Sidra

Jamil, Dr. Saadat Majeed, and Dr. Sarish Rehman. The issue presents a few features of SDGs, including the fabrication of functional nanomaterials for water splitting, energy devices, and sustainability. Our mentors are aiming to publish more valuable original research for the SDGs.

WEmpower Pakistan is a non-profit organization, founded by five young female researchers Ayeesha Mujeeb, Hassina Tabassum, Arzoo Hassan, Arfa Abrar Malik, and Sadia Ahmad. The organization has been aiming to encourage and support young Pakistani women in science, technology, engineering, and mathematics (STEM) careers. WEmpower Pakistan was established with a vision of promoting young Pakistani women in STEM careers by providing a platform for professional development and networking. Since its foundation, WEmpower has hosted numerous events focusing on the professional development of researchers, organizing talks from field experts, and building a mentorship program for young Pakistani women in STEM.⁴ WEmpower Pakistan co-founders and mentors value and support this organization which believes in empowering others to promote optimism and a “can do” attitude.

Science is an objective field of knowledge and ideally should have been inclusive in its nature. But unfortunately, for centuries, gender gap has existed in Science.⁵³ Women in science have made significant contributions to medicine, chemistry, and technology.⁵ However, women's contribution in STEM research has not been cherished much. The scientific community must promote women in STEM for advancement in innovations and inventions.¹ It will enrich the importance of a supportive scientific network for STEM without gender discrimination. This issue is managed by an all-women team, which highlights the commitment of Pakistani females toward science and sustainable development of society.

I would be thankful to the Materials Innovations editorial office and production teams at Hexa Publishers for publishing this special issue. Lastly, I express my gratitude to Dr. Khurram Shehzad, Editor-in-Chief of Materials Innovations, for accepting our proposal for this special issue and providing a chance to mentos for editing this special issue. We are hoping that our hard-working team and mentors' contribution would upgrade research quality in the scientific community.

Biographies of the Guest Editors



Dr. Sofia Javed is presently working as Associate Professor in the Materials Engineering Department of School of Chemical & Materials Engineering, NUST. Her areas of research include nanostructured materials for energy storage and conversion. She has published 36 research articles in well-reputed journals and has presented her work in several conferences. She has also authored two book chapters. Her publications collected more than 470 citations with H-index of 13. Dr. Sofia has acquired funding of about 18 M PKR from HEC, USAID and other funding agencies as P.I. She has supervised 14 MS student projects and 4 PhD students are currently under her supervision. Dr. Sofia is also a member of the American Chemical Society (ACS) & The Minerals, Metals & Materials Society (TMS) USA.



Dr. Faryal Idrees did her PhD in Materials Science and Engineering in 2015 from the Beijing Institute of Technology, China. In 2017, she has been selected for one of the prestigious awards of Germany known as Alexander-von-Humboldt-Stiftung. She is amongst the 2% of Pakistani females who have gotten this opportunity so far. She has published 55 SCI papers/book chapters as an author/co-author in SCI journals with well-renowned publishers. Her citation score is more than 4806 with 28-h index. At the same time, she is a part of many scientific projects

and conferences which significantly includes PSF-NSFC-IV/Phy/P-PU(31) joint international project. Currently, she is working as an Assistant Professor in the Department of Physics, University of the Punjab, Lahore, Pakistan. Her research skills include a real case study of photocatalytic hydrogen evolution & NO_x degradation, photochemistry, and photolysis properties.



Dr. Sidra Jamil is currently a postdoctoral scholar in Prof. Maowen Xu's group at Southwest University in Chongqing, China. She received doctoral degree in Material Science and Engineering from Xiangtan University in June 2021 under the supervision of Prof. Xianyou Wang. Her research focuses on layered oxide material for Li/Na-ion batteries and all solid-state Li-ion batteries as well as electrode materials for Li/Na-S batteries. She received funding from Natural Science Foundation of Chongqing for the development of Ni-rich layered oxide cathode material for all-solid-state lithium batteries. She published articles in international renowned journals such as Nano Energy, Energy Storage Materials and Journal of Materials Chemistry A. She is associated with WEmpower Pakistan as Mentor and contributing in organizing online lecture series on forum.



Dr. Sarish Rehman is a materials scientist at McGill University, Canada. She has started her career at the University of Waterloo, Canada where she has established her expertise in sustainable electrochemical technology, focusing on renewable energy storage and conversion applications. She obtained her MS degree in Materials & Surface Engineering from the National University of Sciences & Technology (NUST), Islamabad, Pakistan. She obtained her PhD from Peking University, China with distinction. Her focus of research is the design of advanced nanomaterials materials for energy storage (Li-Sulfur batteries, Li-ion batteries and solid-state batteries). She is associated with WEmpower Pakistan as Mentor since the platform came into being.



Dr. Saadat Majeed is working as Associate Professor at Bahauddin Zakaryia University Multan, Pakistan. She obtained her PhD in 2015 from State Key Laboratory of Electroanalytical Chemistry, Changchun Institute of Applied Chemistry Chinese Academy of Sciences, Changchun China under supervision of Prof. Dr. Guobao Xu. She has multidirectional research interest in synthesis of materials and analysis by electrochemistry including bio electroanalytical chemistry, sensors (biological, chemical, optical), microfluidic, and paper-based devices for energy and health applications. She is supervising/ supervised 04 PhD and 42 MPhil students. She has an international patent and more than 70 publications in international well reputed journals of her field. She has contributed 15 book chapters in different books. She is member of many academic and professional bodies including Mentor at WEmpower, Pakistan.



Message from Dr. Ayeesha Mujeeb (Chairwoman WEmpower Pakistan)

“Science has taught us how to create, technology has taught us how to innovate, engineering has taught us how to adapt, and Mathematics has taught us how to solve. STEM thinking is not only about laboratory equipment; it’s about solving real-world problems.”

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