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## FOREWORD: Perspectives of TWAS Young Affiliates from the Global South on Solving World's Energy Issues

Fostering the next generation of scientists in the developing world is one of the strategic priorities of The World Academy of Sciences (TWAS). In 2007, TWAS launched the "TWAS Young Affiliates Program" to recognize the most accomplished young scientists in various regions of the developing world. Each year, TWAS, in collaboration with five TWAS Regional Partnerships, select up to 25 outstanding young scientists under the age of 40 as TWAS Young Affiliates, for a five-year term. After this period, Affiliates become Alumni.

TWAS Young Affiliates are selected in a time of their career when they bring valuable energy and perspective to the Academy. To maximize the impact of the creativity and intellectual skills of TWAS Young Affiliates, the TWAS Young Affiliates/Alumni Network (TYAN) was proposed and established. TYAN was launched during the TWAS 27th General Meeting (14–17 November 2016) in Kigali, Rwanda.

As a network of Young Affiliates under the auspices of TWAS, TYAN strategic priorities are aligned and complementary to those set-forth by TWAS. Accordingly, TYAN's strategic priorities include increasing collaborative networks, capacity building, increasing TYAN's visibility and addressing the United Nations – Sustainable Development Goals (UN - SDGs). To this end, TYAN is committed to work hand-in-hand with TWAS, leveraging on the Young Affiliates Network to achieve the overall goals that will elevate the scientific standards and knowledge of scientists in the developing world and to promote scientific advancements globally. "A world connected by scientific cooperation" represents the vision of TYAN.

To further catalyze interdisciplinary research and development collaborations to address global challenges, the *TYAN International Thematic Workshops (TITO)* program was established. This flagship program of TYAN is aimed at updating the concepts and recent successes in specific research topics, facilitating the initiation and building of mutually beneficial and synergistic research collaborations between scientists from different continents and countries that will enable TYAN members (and their working environment) to continue to strive for excellence in their respective research pursuits.

This Virtual Special Issue publishes the proceedings of the "1st TITO on Fundamentals of Photoelectrochemistry: From Materials Chemistry to Energy Conversion", held on 23rd–27th April 2018, at Instituto Tecnológico de Chascomús (INTECH, Argentina). The workshop program is designed to address several areas of the United Nations Sustainable Development Goals (UN - SDGs) including Equality Education (SDG 4), Clean Water and Sanitation (SDG 6), Affordable and Clean Energy (SDG 7), Climate Actions (SDG 13) and Partnerships for the Goals (SDG 17).

Briefly, this Virtual Special Issue summarizes the latest advances and frontiers in chemical energy disciplines, emphasizing

particularly the role of material physicochemistry on renewable energy. The eight contributions to this issue cover visible-light-active transition metal oxynitrides for solar water splitting, self-aligned ZnO nanorods for energy-efficient hydrogen sensor, new approaches to energy-efficient light-emitting device applications, semiconductor foams: giant surfaces with tunable properties at nanoscale dimensions, chemical kinetics and the photoelectrochemical oxygen transfer reaction, pigments extracted from local species as clean and cheap component of Dyes-Sensitized Solar Cells (DSSC), and lanthanides as upconverter luminescent materials. Further, the opportunities and challenges of renewable energy research in Nigeria were discussed. We also highlighted the perspectives of young scientists working in developing countries on solving world's energy issues by applying modern scientific concepts. A key to facilitating the advancements in this area is the successful establishment of young scientist networks that could promote communication and exchange between individuals working on chemical energy-related research in the world.

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