



Conference Report

Science & Technology for Next Generation

Executive Summary

SAYAS members Profs. Dustin van der Haar (University of Johannesburg) and Thashree Marimuthu (Wits University) were invited by the Chair of The Young Korean Academy of Science and Technology (Y-KAST), Prof. Young Keun Kim, and fellow member of The Korean Academy of Science and Technology to attend and present at the 2nd Y-KAST International Conference held at Jeju Shinhwa World on Jeju Island, Korea.

This significant event brought together members of various young academies, including Y-KAST, along with other young scientists from around the world. Notable participants included Prof. Anna Danielsson (Stockholm University), Prof. Gabriele Messori (Uppsala University), and Dr. David Labonte (Imperial College). The conference was established to provide a platform for emerging researchers to present their academic achievements and to network with peers worldwide. The theme of the conference was "Science & Technology for Next Generation."

The theme "**Science & Technology for Next Generation**" underscores the role of emerging researchers to advancing scientific and technological innovation to meet the challenges of the future. The 2nd Y-KAST International Conference exemplified this dedication by bringing together young scientists together to discuss and collaborate on the latest scientific achievements. By focusing on next-generation science and technology, Y-KAST is preparing to address critical issues such as sustainability, healthcare, and technological integration, ensuring a prosperous and innovative society.

Pre-conference event included a Y-KAST Talk on Science Policy with Mr Chang Yune LEE; (The 1st Vice Minister, Ministry of Science and ICT) followed by strategies to support research of young scientists and Engineers at Universities. Following the opening ceremony, academic presentations, flash talks and poster presentations took place in three parallel sessions focusing on Basic Science, Applied Science, and Bio-Medical Science. These sessions allowed young researchers to showcase their work and engage with cutting-edge scientific developments. A discussion session provided an opportunity for attendees to delve deeper into the topics presented and to engage in interactive dialogue. Overall, the 2nd Y-KAST International Conference successfully facilitated the exchange of knowledge, the presentation of innovative research, and the formation of valuable connections among young scientists from around the world.



Key Learning Outcomes

Basic Science

The sessions on Basic Science covered a wide range of fundamental research topics, including physics, chemistry, and mathematics. For example, innovative topics discussed included:

- Mathematics (differential geometry, machine learning, data science)
- Physics (quantum physics, physical and statistical characterization of extreme climate events)
- Chemistry (plant regeneration, photosynthesis, environmental stress, biocatalysts)

Attendees gained insights into the latest theoretical developments and experimental techniques. Key discussions focused on advancing the understanding of natural phenomena, improving research methodologies, and fostering interdisciplinary collaborations. The importance of basic science as a foundation for applied research and technological innovation was a recurrent theme.

Applied Science

Presentations in the Applied Science sessions highlighted the practical applications of scientific principles in various industries. Topics included renewable energy technologies, materials science, and environmental engineering. Participants explored innovative solutions to contemporary challenges, such as sustainable development and climate change. The sessions emphasized the translation of basic research into tangible technologies and the role of applied science in driving economic growth and societal advancement. For example, innovative topics discussed included:

- Functional materials for energy and environmental applications
- Ultrafast photonics and green fabrication pathways
- Application of Artificial intelligence, machine learning g
- Identity and power in the context of teaching and learning science and technology for next generation.

Bio-Medical Science

The Bio-Medical Science sessions addressed cutting-edge research in health and medicine. Presentations covered topics such as nanomedicine, biotechnology, neuroscience, and medical devices. For example, innovative topics discussed included:



- 3D Printing, Tissue engineering and regenerative medicine
- Natural products and indigenous medicine
- Novel anticancer compounds
- Ultrasound technology as alternative treatment options
- Translation and commercialisation of scientific research

Researchers shared breakthroughs in understanding diseases, developing new treatments, and improving healthcare delivery. Collaborative discussions underscored the need for interdisciplinary approaches in tackling complex health issues and the potential of biomedical science to enhance the quality of life.

These key learning outcomes reflect the diverse and quality of research presented at the conference. They underscore the event's success in fostering a vibrant scientific community dedicated to advancing knowledge and addressing global challenges under the theme "Science & Technology for Next Generation."

Overall, the message was clear: the application of basic science the translation of research thereof is crucial for a sustainable future. This event highlighted the role of emerging researchers as global leaders in fostering scientific talent and driving forward-thinking research. By focusing on next-generation science and technology, we can be in a better position to address critical issues such as sustainability, healthcare, and technological integration, ensuring a prosperous and innovative future.