

WELCOME NOTE AND AN OVERVIEW OF MSSEESA BY THE CHIEF COORDINATOR AND DEPUTY CHIEF COORDINATOR OF MSSEESA, PROF. BERNARD O. ADUDA & PROF. MWAMBURI MGHENDI

Welcome

It gives me great pleasure and honour to welcome you all to the 2nd Young Scientists' MSSEESA Conference on Materials for Solar Energy Conversion 2020. We welcome you all in our capacities as the Chief and Deputy Chief Coordinators of the Network of Materials Science and Solar Energy for Eastern and Southern Africa (MSSEESA).

Research and application of materials for solar energy is of particular interest to materials scientist who are within the MSSEESA umbrella given the significance that energy plays in socio-economic development. It is a known factor that greater part of rural Africa remains without electricity due to high cost for grid extension and installation. While solar energy is seen as an alternative that has the potential for rapid penetration in provision of electrical energy to rural areas, costs associated with large scale solar system installation remain a barrier. These costs are primarily linked to processing of silicon that is used in conventional inorganic solar cell. The MSSEESA Network recognizes the need for research in materials for low-cost efficient solar cells that have superior properties, training of requisite human resources involved high research and also those involved in installation and maintenance of the PV devices.

Overview of MSSEESA

Recent years have seen a tremendous development in materials science giving rise to a wide range of new materials, fine tuning or re- engineering of existing ones. This rapid development has in turn resulted in many new applications in diverse fields from medicine, engineering, electronics, smart fabrics, solar energy, etc. Accelerated developments in materials science and emergence of new applications can be ascribed to high level of research activities in this area. It is without doubt that this has not only had varied positive impacts but also challenges, for example the disposal of plastic materials.

The idea of the Network was mooted when the Group leaders of various Physics Departments (Thematic areas) from the Eastern and Southern Africa supported by the IPPS converged at Uppsala during the 2002 IPPS Reference Group Meeting and who saw the need for such a network. This idea was then sold to the then ISP Director and Director of IPPS, Prof. Lennart Hasselgren. The pioneer Group comprised: Prof. Rogarth Kivaisi (deceased), Geoffrey W. Mbise (deceased) (University of Dar es Salaam), Prof. W. Bantikassegen (Addis Abba University), Dr. Godfrey Chinyama (deceased) (University of Zambia), Prof. Tom Otit (University of Makerere), Prof. Bernard O. Aduda (University of Nairobi), and Prof. Mhgendu Mwamburi (then of Moi University – Chepkoilel Campus,

which has now become the University of Eldoret). The aim of the Network as then envisaged was to help utilize the scarce but highly trained physicists and technologists within the Network efficiently through sharing skills, facilities and other resources, train skilled human resources, and to enable the scientists and postgraduate network. The specific objectives were to:

1. promotion and coordinate of research activities in Materials Science and Solar Energy in the sub-region;
2. enhance human and infrastructure capacity to advance research in Materials Science and Solar Energy;
3. strengthen the research facilities and activities and Postgraduate Training programmes by complementing activities of Materials Science and Solar Energy in various institutions of the sub-region;
4. assist the countries in the sub-region to build and sustain a critical mass of credible scientists through postgraduate training and research in areas of Materials Science and Solar energy that are of critical importance to sustainable Socio-Economic development;
5. coordinate activities of Materials Science and Solar Energy in the various Universities that has sub-region characters;
6. attract talent and induce competent young scientists with a gender equity distribution to work in their own countries;
7. solicit resources for carrying out activities that are of strategic importance for regional socio-economic development;
8. provide avenues for international cooperation and links in areas of Materials Science and Solar Energy;
9. promote joint research ventures amongst members of MSSEESA;
10. implement cost effective utilization of available resources in the sub-region;
11. promote and facilitate dissemination and exchange of information.

Subsequent to 2002 when the idea of the Network was mooted, several meetings were then held – in rotational basis – in the various universities from which the founder members came to draft the MSSEESA constitution, with the seed money coming from the IPPS. The individual groups receiving support from IPPS then became the specific nodes from each country, with exception of the Kenyan case where the two groups (Nairobi and Eldoret) formed the Kenya node. The Ethiopian node did not take off effectively following the relocation of W. Bantikassegen to the United States of America shortly after.

Once the Network constitution was ready, the University of Dar es Salaam became the first Coordinating Board node. The Coordinating Board meets once in a year and the first Annual Coordinating Board was held on Saturday, April 4, 2009, in Dar es Salaam. This role is rotational so as to give each node a chance to coordinate the Network. From the Dar es Salaam, the University of Zambia and the University of Makerere have served as Coordinators of the Network consecutively.

The Network's progress to achieve its key objectives has been reasonable (though there is room for improvement). Many academic staff members, technologists and students have attended many workshops and conferences organized by member nodes, there have been student exchange visits to member nodes, technologists with specific skills have helped set up/repair equipment at member nodes laboratories. It has also faced challenges, notable being the natural attrition of its lead scientists. For example, three pioneer members have passed on (two in the University of Dar es Salaam, and one in the University of Zambia), while aging/retirements and promotion to administrative positions in respective node members' universities have taken place. These incidences have taken away key resource people to the Network.

In furtherance of the MSSEESA objectives, we have organized this conference so as to bring together seasoned scientists and young scientists from different countries working in the areas of materials science and solar energy to interact together and share ideas. I want, at this juncture state that that there has been an over whelming response to participate in this conference to the extent that we had to decline accepting many requests for participation, especially from many budding scientists undertaking their research in various universities within the region. The nature and diversity of papers to be presented clearly reflected the strong materials in solar energy technology linkage. It is the aspiration of the MSSEESA Network that its contribution from the various Nodes will in future be recognized through its research outputs.

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I want to thank the sponsors, the International Science Program (ISP) led by the Director and Deputy Director of the International programme in Physical Sciences (IPPS) Prof. Ernst Gronningen and Prof. Carla Puglia, respectively. The International Science Programme (ISP) to which IPPS belongs has provide long-term financial support to research groups that form MSSEESA. Several scientists – old and upcoming owe their status to ISP. We very much appreciate this support.

Finally, I thank the MSSEESA Coordinating Board Members, the Local Organizing Committee members, the participants and the hosting institution – the University of Nairobi, and I take this opportunity to introduce the MSSEESA Coordinating Board Members, and members of the Local Organizing Committee (LOC).

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