INTRODUCTION TO THE AFRICAN MATERIALS RESEARCH SOCIETY (AMRS)

Pro. Hulda Swai: New AMRS President

BOTSWANA, New Home of the AMRS Secretariat

AMRS2019 will be in Arusha Tanzania
We are delighted to present the first issue of the African Materials Research Society (AMRS) Newsletter. The issue presents the history of AMRS from its inception at the August 2000 US-Africa Materials workshop right up to the last biennial conference that was held in Gaborone Botswana in December 2017. Some of the highlights of the issue include the announcement of Prof Hulda Swai as the new president of the AMRS, the announcement of Botswana as the new home of the AMRS Secretariat and the announcement of Tanzania as the next host of the AMRS International Conference which will be held at the Nelson Mandela African Institute of Science and Technology (NM-AIST) from the 10th - 13th December 2019 http://africanmrs.net/tanzania-2019/.

My role as the AMRS Administrative Assistant is to take care of the day to day activities of the AMRS secretariat office. I am a graduate of the University of Botswana with a Bachelors Degree in Political Science and Administration.

One of the key things that we are doing is to create a membership database for all AMRS members. Secondly, we have created a platform where all AMRS members can be well informed about AMRS activities that are taking place in Africa and different parts of the world to ensure that we have materials research related activities in between the biennial AMRS conferences. Consequently, we have created a website that we use as a basis for membership subscription and communicating different aspects of AMRS activities.

Please follow the link http://africanmrs.net/. For all inquiries, please contact Khumo at africanmrs.secretariat@gmail.com.
In December 2017, Prof. Hulda Shaidi Swai was elected the new President of the African Materials Research Society at a conference held in Gaborone, Botswana.

She is succeeding Prof. Wole Soboyejo who is a renown Materials Scientist and currently at the Worcester Polytechnic Institute in Worcester, Massachusetts. Professor Hulda Swai is a Nanotechnology Scientist, in the field of Materials Science with 27 years of experience in directing, multidisciplinary research and technological innovation that is geared towards improving the quality of life for the people of Africa.

Over the years, her research has focused on Biomedical Research and Training, Nanomedicine-based Drug Delivery Systems, especially for Poverty Related Diseases (PRDs) like HIV, TB and Malaria. Prof. Swai has demonstrated excellent foresight in strategic leadership and has always seen an urgent responsibility to advance Materials research in Africa, while simultaneously generating highly qualified human capacity for promotion of sustainability in development not only at a continental level, but also at a global level.

Education and Training

Professor Swai received her PhD in Biomedical Materials Science at the University of London, Queen Mary & Westerfield College in 2000. Her PhD was in the field of Biomaterials in Relation to Dentistry and she wrote a thesis on Water Sorption and Drug Release behaviour from Heterocyclic Methacrylate based Polymers. In 1985, Professor Swai received her MSc in Technology and Development in Chemical Engineering at the University of London, Imperial College of Science and Technology where she wrote a thesis on Feasibility Study of Alcohol from Cassava as a Fuel Substitute in Tanzania. In 1980, Prof. Swai was awarded her BSc General degree at the University of Dar es Salaam with a major in Statistics and Chemistry.
Career/ Positions held

Prof. Swai has held prestigious positions with a high level of responsibilities. Currently, she is an Associate Professor, in the School of Life Science and Bio-engineering and also a Director of the African Center of Excellence at the Nelson Mandela African Institution of Science and Technology (NM-AIST), Tanzania. In September 2013, Prof. Swai got a lifetime appointment as an Extraordinary Professor at the University of Pretoria, South Africa. In this role she is involved in developing and executing joint research projects, jointly supervising research for PhD and MSc. students and fund raising through joint proposal writing. From May 2001 to July 2014, Prof. Swai was the Head of the Pan-African Centre of Excellence in Nanomedicine Research, a Senior Principal Research Scientist and Research Group Leader of the Encapsulation and Drug Delivery Research Group at the CSIR Materials Science and Manufacturing, Pretoria, South Africa. In this role, she and her team added a level of novelty in drug delivery of anti-TB drugs.

Based on her longterm experience in Materials Science and her pool of knowledge and expertise in leadership, Prof. Swai has a lot to offer to AMRS in her tenure of service as the President.

HISTORY OF AMRS

By Prof. Wole Seboyje

It has been almost nineteen years since the idea of the African Materials Research Society (AMRS) emerged in the year 2000 at the US/Africa Materials Workshop that was held at the Farm Inn in Pretoria, South Africa. The Pretoria Workshop, which was partly inspired by President Bill Clinton’s visit to Africa in 1998, was organized by Dr. Adrian DeGraef of the U.S. National Science Foundation (NSF) and Dr. Jill Sawyer of South Africa’s National Research Foundation (NRF).

The Pretoria Workshop brought together 70 scientists, engineers and policymakers from Africa and the U.S. to discuss possible areas for collaborations in materials research and education. As a scribe at the workshop in Pretoria, it was my privilege to write down many of the ideas that were suggested for future Africa-Africa and US-Africa collaborations in materials research and education. These guided future activities to foster collaborations between U.S. and African scientists. They also stimulated the efforts to establish the African Materials Research Society (AMRS) within the framework of the International Union of Materials Research (IUMRS).

Following the Pretoria Workshop, Prof. Aboubaker Beye of the Cheikh Anta Diop University organized the first conference of the African Materials Research Society (AMRS) in 2002. The conference, which was held in Dakar, Senegal, brought together African Materials Scientists, such as Prof. Frank Nabaro of Wits University, South Africa, with African and U.S. scientists, engineers and policymakers that were interested in developing an enduring structure for the AMRS. The Dakar Workshop included
some hotly contested sessions in which a number of participants argued strongly for the inclusion of the African governments in the operations and decision-making processes of the AMRS. Ultimately, the majority of the participants voted for an AMRS that was independent of government, but a collaborator with government in appropriate areas.

Subsequently, Dr. Adriaan de Graaf (Mathematics and Physical Sciences Division of NSF) and Dr. Elbert Marsh (Engineering Division of NSF) sponsored a series of U.S./Africa Materials Workshops in San Diego and Puerto Rico. These were designed to bring together researchers from Africa, Latin America and the U.S. to develop thematic areas for future collaborations. They resulted in the identification of research opportunities in the areas of: thin films and heterogeneous materials, with applications to sustainable buildings, solar energy, water purification and biomaterials. They also resulted ultimately in the formation of the U.S./Africa Materials Institute (USAMI), the Americas Program, and a US/Egypt Program that were all initiated at Princeton University in 2003.

The above programs brought together teams of African, U.S. and Latin American researchers to explore the development of a triangular network of interactions between the US, Latin America and Africa. The network included the late Professor Olusegun Adewoye of Nigeria, the late Prof. Fawzy Hammad of Egypt, Prof. Frank Kavishe (a Tanzanian that was then based in Kenya), Dr. Joe Zimba of Zimbabwe and Prof. Holmer Savastano of Brazil. This first group initiated collaborative research in areas that were identified at earlier workshops. They also identified other researchers that were later invited to participate in the emerging collaborations. These collaborations resulted in the publication of more than 100 papers in peer-reviewed journals.

Many of those involved in the early workshops volunteered to organize the early conference of the AMRS. The first AMRS conference was organized by Prof. Aboubaker Beye Dakar; Senegal in 2002, while the second AMRS conference was organized by Prof. Yunus Ballim in Johannesburg, South Africa in 2003. This was followed by biennial AMRS conferences in Marakesh, Morocco, in 2005 (organized by Prof. Abdelazeez Jazouli); Dar-es-Salaam, Tanzania in 2007 (organized by Prof. Joe Tesha); Abuja, Nigeria (organized by the late Prof. Olusegun Adewoye); Victoria Falls, Zimbabwe in 2011 (organized by Dr. Francis Gudyanga, Dr. Joe Zimba and Prof. Eric Garfunkel), Addis Ababa, Ethiopia in 2013 (organized by Prof. Yohannes Teketel and Prof. Eric Garfunkel), Accra, Ghana in 2015 (organized by Dr. David Dodoo-Arhin and Prof. Eric Garfunkel), and Gaborone, Botswana in 2017 (organized by Dr. Samuel Chigome and Prof. Eric Garfunkel).

As we prepare for the next conference of the AMRS, which will be held in Arusha, Tanzania, it is important to appreciate the efforts of our second female President, Prof. Hulda Swai, who is working hard to grow the AMRS. It is also exciting to appreciate the greatness of our first female President (Prof. Mona Marei of Alexandria University), who excited us with her pioneering work on tissue engineering. We must also appreciate what has been achieved by this enduring network that has grown to become the AMRS. From the early days of the AMRS in Dakar to the last AMRS conference in Gaborone, where we welcomed the former Vice President Eric Keabetswe Mokgweetsi Masisi of Botswana (now the President of Botswana) and 1987 Chemistry Nobel Laureate Jean-Marie Lehn, the AMRS has emerged as an important community of scientists and policymakers.
Furthermore, many of the scientists and policymakers involved in the AMRS have helped to establish the Nelson Mandela Institutions of Science and Technology in Abuja (African University of Science and Technology) and Arusha (Nelson Mandela African Institute of Science and Technology – NM-AIST), while others have established three African Centers of Excellence in Materials in Abuja, Nairobi, and Arusha, with support from the World Bank and African governments.

Thus, as we prepare for the next conference of the AMRS, which is being organized by our second female President, Prof. Hulda Swai of NM-AIST), it is important to appreciate how far we have come in almost two decades of interactions. During this period, the secretariat has moved from Dakar to Abuja and now to Gaborone. We have also had a number of Presidents (Yunus Ballim, Olusegun Adewoye, Joe Zimba, Mona Marei, and Wole Soboyejo) that have grown the AMRS into a community that has the potential to transform Africa’s minerals into wealth. However, there is still much to do to enable us to use materials as the engines of African development.

Hence, the theme of this year’s AMRS conference is “Materials for African Development.” We will also be discussing the future of the AMRS within the context of the 4th Industrial Revolution, the Future of Work and the Worker, and the Circular Economy. Thus, as we look forward to the next AMRS conference in Arusha, Tanzania, we hope that the stories and the news in this inaugural newsletter will encourage you to join us in Arusha, and continue to contribute your own ideas and efforts to the development of Africa.

In my opinion, this can be achieved through our integrated efforts in materials research, education and outreach to industry and society, within the context of the AMRS. Therefore, the objectives of AMRS are:

1. To promote excellence in all aspects of materials research in Africa.
2. To ensure that materials research contributes significantly to the various national strategies for social equity and poverty alleviation in a constructive and sustainable manner.
3. To work closely with governments and state structures to develop appropriate policy and support for materials research and development.
4. To build a network of materials researchers which encourages multi-national and multi-disciplinary collaboration in materials research – both within Africa and between African researchers and the rest of the world.
5. To identify and foster specific areas of materials research as appropriate in the different countries or regions in Africa.
6. To promote information and resource sharing, exchange and development in materials science.
7. To regularly host conferences, symposia and conferences with a view to promoting dialogue between materials researchers within Africa as well as with researchers outside the continent.
8. To encourage downstream materials manufacturing and value-adding activities in all countries in Africa.
9. To strengthen the facilities and other resources for materials research in higher education sectors.
His Excellency the President of the Republic of Botswana, Dr. Eric Keabatswe Mokgweetsi Masisi officially opened the 9th International Conference of the African Materials Research Society that was held in Gaborone, Botswana 9-14 December 2017.

This showed the commitment of the government of Botswana to Materials Research, which serves as an example for other African countries. The commitment of the government of Botswana to Materials Research is also demonstrated by the establishment of the Botswana Institute for Technology Research and Innovation (BITRI) Centre for Materials Science http://www.bitri.co.bw/cms/. Therefore, it did not come as a surprise that with such support from the government, AMRS2017 was a very successful conference. Consequently, the AMRS Board appointed Botswana as the home of the AMRS secretariat hosted at BITRI www.bitri.co.bw. The main objectives of the secretariat are to carry out administrative tasks aimed at achieving the following objectives;

1. To ensure the involvement and coordinated participation of all 54 African countries in the activities of AMRS.
2. To establish a sustainable source of funds for activities of AMRS.
About the Host City - Arusha

Arusha is a world-famous city in the northeastern part of Tanzania, also known as the Geneva of Africa. It is a very popular destination for conferences, a hub of the East African region, a global tourist destination and a gateway to Africa's most famous landscapes and natural attractions. This includes Mount Kilimanjaro - the highest mountain in Africa; Ngorongoro Crater - where human societies coexist in harmony with wildlife; and the Serengeti National park - home to thousands of wild animals and the world-famous Wildebeest and Zebra migration. These three reserves were recently declared world wonders - making Tanzania the best Africa Safari destination.

Hotel Accommodation

Hotel accommodation has been secured at selected hotels in Arusha in various categories ranging from 5 Star to budget hotels. Names and rates will be announced soon.

Pre and Post Conference Tours

While you are in Arusha do not miss the opportunity to take the following tours organized at best rates before and after the conference:

1. Half Day Arusha tour of German Boma and local markets
2. Full Day to Arusha National Park
3. Full day to Mount Kilimanjaro
4. Full day to Ngorongoro Crater (with game viewing)
5. Trips to the exotic Island of Zanzibar (arranged upon request)

Delegate booking, exhibition and travel logistics:

Green Inspiration – DMC – PCO
Phone: +255 27 205 0081
Email: icarms2019@greeninspirationsdmc.com
Online booking: http://africanmrs.net/tanzania-2019

Collaboration, Sponsorship and Media

Nelson Mandela African Institution of Science and Technology (NM-AIST)
Phone: +255 746 513 856 | +255 786 223 122
Email: amrstanzania@gmail.com

The 10th international conference of the African Materials Research Society (AMRS 2019) will be held in Arusha, Tanzania from the 10th -13th December 2019, at the Nelson Mandela African Institution of Science and Technology (NM-AIST).

The main Objective of the AMRS international conference series is to create a platform for science and research communities in Africa and from around the world to foster relationships, build knowledge and promote action for further understanding and collaboration in fields associated with materials research and technology. Ultimately our vision is to see Africa able to fully harness and exploit its rich natural resources greatly endowed by nature.
MESSAGE FROM THE AMRS PRESIDENT

Dear Colleagues,

It is my great pleasure to invite you to attend the 10th International Conference of the African Material Research Society (AMRS) in Arusha, Tanzania, from the 10th – 13th December 2019. The conference will also be preceded by a workshop from the 8th – 9th December 2019, primarily for training and empowering students and early career materials researchers and technologists.

Arusha has been chosen to host the AMRS 2019 conference not only because of its magnificent mountains and game reserves but also because of the Tanzania Development Vision 2025 and National Agenda for industrialization - which aim at high level of human development and sustainable economy growth to transform the country to a strong middle income economy.

I am also happy to report that the AMRS now has a global presence as evidenced by increased involvement in AMRS activities by our colleagues from Europe, Asia, North and South America. This will continue to enable exploration of challenges and sharing of solutions on how material research can play a significant role in driving African and global development considering that the materials aspect is a key imperative in all development and economic sectors.

The theme for the AMRS 2019 is “Materials for African Development”. The African continent is endowed with rich natural resources, but due to a number of factors including lack of a critical mass of skilled scientists and technology professionals, we are yet to harness these resources to their full potential and we remain the least developed continent.

It is thrilling to see the progress that the AMRS is making in member countries in championing and advancing this agenda. It underscores the importance of our society and the International Science and Technology Conference we host every other year. It is important that we continue these efforts to address the issues, attract more members and new partnerships, and engage the larger public to participate in dialogue and action.

I am happy to inform you that the AMRS 2019 Conference will be officiated by Her Excellency Hon. Samia Suluhu Hassan, the Vice President of the United Republic of Tanzania.

To make the AMRS 2019 Conference impactful and successful, I would like to take this opportunity to request for in-kind and financial support from the Private Sector, Governments, Development Partners and people of good will. Your support will also allow us to invite and host groups of young scientists from different parts of Africa - the future of our motherland.

Thank you and see you in Arusha!

Prof. Hulda Shaidi Swai
President, African Materials Research Society (AMRS)
ATTEND AS A DELEGATE

The AMRS 2019 Conference shall address challenges and opportunities for Materials Science and technology in the following specializations:-

1. Materials for Health
2. Sustainable Buildings & Construction Materials
3. Water & Environmental Mitigation Technologies
4. Nanoscience/Nanotechnology
5. Mining & Mineral Processing
6. Materials for Agriculture/Environment
7. Education/Networking in Materials Science & Engineering
8. Materials for Energy
9. Computational Materials Science
10. Manufacturing & Structural Materials

GET EXPOSURE AS AN EXHIBITOR

Engage with participants, make new contacts and consolidate existing relationship. The exhibition at AMRS 2019 promises to be a vibrant place strategically located at the centre of the conference venue. There is a limited number of exhibition booths available on first-come first served basis. Please contact the secretariat at AMRS 2019 For Enquiries.

AMRS 2019 LEVELS OF SPONSORSHIPS

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<tr>
<th>SPONSORING LEVELS</th>
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<td>Tanzanite Welcome Reception (One available)</td>
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<td>Titanium (One company)</td>
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<td>Delegate bags (One company/ Benefits at same level with Silver)</td>
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<td>Coffee Break per break (7 available/ Benefits at same level with Silver)</td>
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<td>Delegate Badges (One company)</td>
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<td>Patrons of Students (Student Scholarship amount per student. Several students can be sponsored by one company)</td>
<td>2,500 $</td>
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Conference Proceedings

AMRS Advances was the official journal for publishing proceedings for the 9th International conference of the African Materials Research Society (AMRS2017). All articles were published in Volume 3 of 2018.

**Issue 34-35 AMRS2017:**
https://www.cambridge.org/core/journals/mrs-advances/issue/1250CD6B9EF714A50293E5D01C4B5E1

**Issue 36 AMRS 2017:**
https://www.cambridge.org/core/journals/mrs-advances/issue/7D32475297EF3F1943CF8F72FD995E49

**Issue 37 AMRS 2017:**
https://www.cambridge.org/core/journals/mrs-advances/issue/CB788A0BD6D3181CD5A21A11B5575AB6

**Issue 38 AMRS 2017:**
https://www.cambridge.org/core/journals/mrs-advances/issue/F28F541608D68610A029EA953FB2C1D5

**Issue 42-43 AMRS 2017:**
https://www.cambridge.org/core/journals/mrs-advances/issue/70C9F7BE8B494CD2CF0C2EA17EEE2858

Other AMRS Related Publications

Below is a list of articles that were published outside the conference proceedings.

https://community.apan.org/cfs-file/__key/docpreview-s/00-00-01-96-56/1200-Zimba.pdf

   August 2001, Nairobi, Kenya

   Benjamin S. Hsiao, Samuel Chigome & Nelson Torto, 213-215  
   https://www.nature.com/articles/s41563-018-0031-7

   https://www.cambridge.org/core/journals/mrs-bulletin/article/addressing-africas-challenges-through-materials-development/517F39DAF0A9E979E0026AEDCFE9AADD

   https://www.nature.com/articles/s41563-018-0037-1

   https://pdfs.semanticscholar.org/8a52/eec2ea79bd5f11bed27432721f3807f36c50.pdf

   https://researchspace.csir.co.za/dspace/handle/10204/5695
It’s in the HEART & HEAD

CREATIVE STRATEGY / DESIGN & INNOVATION

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