



## **MINUTES**

**USAfrica MATERIALS IMPLEMENTATION MEETING**

**August 13, 2001**

**NAIROBI, KENYA**

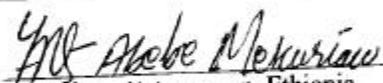
## TOWARD A *USAfrica* MATERIALS RESEARCH AND EDUCATION NETWORK

Engineering materials are more than mere components in technology; rather, the basic properties of materials frequently define the capabilities, potential, reliability, and limitations of technology itself. Improved materials and processes will play an ever increasing role in efforts to improve energy efficiency, promote environmental protection, lower health-care costs, develop an information infrastructure, and provide modern and reliable transportation and civil infrastructure systems. Advances in Materials Science and Engineering, therefore, enable progress across a broad range of scientific disciplines and technological areas with dramatic impacts on society.

Continued progress in Materials Science and Engineering is increasingly dependent upon collaborative efforts among several different disciplines, as well as closer coordination among funding agencies and effective partnerships involving universities, industry and national laboratories. In addition, because of the rapidly growing interdependence of the world's economies, partnerships are not only important at the national level but from an international point of view as well.

With this in mind, the US National Science Foundation and Agencies in several African countries co-sponsored a workshop in the area of materials research designed to help stimulate enhanced collaboration among materials researchers and create networks linking the participating countries. The workshop took place in Pretoria, South Africa in August 2000 and identified possible areas for mutually beneficial collaborations. The report of the workshop is available at <http://www.iamrs.org/>.

The first *USAfrica* Materials Implementation Meeting was held in Nairobi, Kenya on August 13<sup>th</sup>, 2001. The undersigned who attended the Nairobi meeting agreed to work toward the creation of the *USAfrica* Materials Research and Education Network and to hold the next meeting within a year in Senegal and report on progress made.

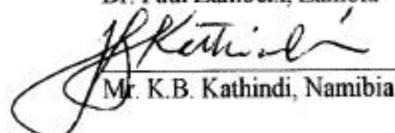
  
Abebe Mekuriauw, Ethiopia

  
Prof. Aboubaker C. Beye, Senegal

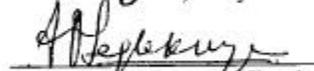
  
Mr. Bethuel Ndlovu, Swaziland

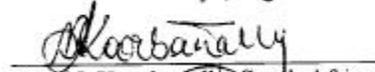
Uganda

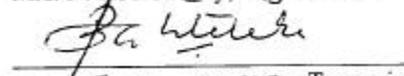
  
Dr. Paul Zambzi, Zambia

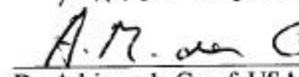
  
Mr. K.B. Kathindi, Namibia

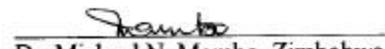
  
Prof. Justin Jina, Kenya

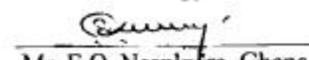
  
Prof. O.O. Adewoye, Nigeria

  
Mrs. N. Koorbanally, South Africa

  
TITUS MTELEGA Tanzania

  
Dr. Adriaan de Graaf, USA

  
Dr. Michael N. Mambo, Zimbabwe

  
Mr. E.O. Nsenkyire, Ghana

## **USAfrica MATERIALS IMPLEMENTATION MEETING**

**Silver Springs Hotel**

**Nairobi, Kenya**

**August 13, 2001**

### **MINUTES**

The US National Science Foundation, SA National Research Foundation and Agencies of several African countries co-sponsored a workshop in the area of materials research in Pretoria, South Africa in August 2000. This workshop was designed to stimulate collaboration among materials researchers and to create an electronic network that would facilitate such collaborations. The government representatives present at this workshop agreed to "...communicate with the materials research communities in the African countries as we jointly work toward implementation of the recommendations in the workshop report." (See <http://www.iumrs.org>). The first US Africa Materials Implementation Meeting was held on August 13, 2001 in Nairobi, Kenya. This meeting was attended by African government representatives from 14 countries and scientific observers. The government representatives described the ways science, technology, and education are supported in the respective countries.

Registration started at 8:15 a.m. There were 32 representatives in attendance.

Dr. Frank Kavishe (Kenya), the Workshop host and one of its organizers, introduced Professor Justin Irina, (Kenya) the host.

Professor Irina asked the group to introduce themselves. He then briefed the group on how the meeting would be run and invited Dr. Robert Eisenstein (NSF) to make welcoming remarks

Dr. Eisenstein thanked everybody for coming and passed on good wishes from Dr. Rita Colwell, the Director, National Science Foundation (NSF). He spoke briefly about the work being done in Materials Research by NSF. He recognized all the NSF staff that have been instrumental in putting together these workshops.

Since the Kenyan Minister for Science and Technology was delayed in arriving, the meeting continued with country presentations. Copies of these presentations are attached.

#### **Kenya**

Professor Justin Irina presented a paper on Kenya. He emphasized the need for closer collaboration between Kenya and USA. He talked about the work in progress to form the East African Materials Research Society (EAMRS) Chapter. He said that there was a need to maximize the impact of development by forming closer relationships between the academic institutions, governments, and private industry. He concluded that full industrialization of Africa should be slated for Year 2020 (as a goal). He assured the group of his government's full support.

## **Namibia**

Mr. Kathindi presented a paper explaining the situation of Namibia in the field of Materials Research. Some asked, "How is Namibia keeping up with the education challenges facing it?" Mr. Kathindi answered, "Great challenge. Graduates go to South Africa and do not come back to Namibia. It is a great challenge". Mr. Kathindi indicated that Namibia is a huge country geographically with a population of only 1.7 million people. He said that the country is very rich in natural resources but these resources are too remote from academic institutions and therefore it is difficult for young researchers to have access in order to carry out any research. He expressed a need for Namibia to invest in its young people. He said that Namibia lacks the expertise among its own people and it has become very urgent for the Ministry of Education to take care of this situation.

## **Nigeria**

Professor Adewoye presented for Nigeria. He informed the group that Nigeria has more than 50 universities and polytechnics and therefore education is viewed very seriously. He emphasized the importance of the role of the private sector in collaboration with academic institutions. He said that economic growth of any developing country cannot be dependent only on raw materials but rather on industrial development. He expressed the urgent need for developing countries to turn to education and scientific research to realize the technological know how that will equip these nations for the future. "Materials research would be the way to go", he said. He continued to say that Nigeria and Africa as a whole must resort to science education in order to develop. He said that his government will fully participate in this initiative.

## **Kenya**

Mr. Peter Okaka represented the Minister of Education. Mr. Okaka was introduced by Professor Irina. Mr. Okaka, Director of the Kenya Commission for High Education read the message from the Minister of Education. The speech is abstracted here.

He thanked the participants for choosing to have this meeting in Kenya. He elaborated on where Kenya is going with science and technology. He welcomed the idea of collaboration between African institutions and U.S. research scientists. Mr. Okaka vowed that his government would do all that is in its power to enhance the development of better collaboration among African scientific bodies. He invited the group to visit with some of the institutions around Nairobi to see what is being done in Kenya in the way of scientific research.

Dr. Eisenstein introduced himself again and reiterated the message from Dr. Colwell, Director of NSF.

Later this morning, Professor King'oriah, Executive Secretary, National Council for Science and Technology, Kenya addressed the group. He emphasized the need for international collaboration through materials research. He stressed the fact that African governments do not

have adequate funding for scientific research and that international support of various kinds of research is very much needed.

## **Mozambique**

Mr. Magaia introduced himself and read a message from the Minister of Education, Mozambique. He described the problems of his country that stem from a total lack of education and poverty. He said that 60% of Mozambique can hardly read or write. "This is mainly a result of long civil wars and natural disasters that have plagued Mozambique for a long time", he said. "In Mozambique, education is basically theory. Technical education is non-existent. Scientific research is far removed from the normal day-to-day activities of the Mozambican government. However, the Ministry of Education has now approved a strategic plan for the next 10 years", he reported. Mr. Magaia was confident that given the sure but slow progress socially and otherwise, Mozambique will be able to forge ahead in the right direction. Mr. Magaia expressed his profound gratitude for having been invited to this forum and promised to take back to his country the important message of fostering Africa-wide and eventually international collaboration in materials research and education.

## **Senegal**

Professor Beye introduced himself and apologized for his Minister of Education who was unable to attend the meeting. He told the group that Senegal is looking at new approaches to education and training. Senegal is creating new universities around the country. His country has 10 million people and a budget of \$2 billion. Only a small portion of this budget goes towards science and technology education. Education and training of civil servants and high-school teachers have been for a while, the main task of universities in Senegal to enable the country to take over the education and administration system from the French government. He explained to the group that even though Senegal's university syllabus is similar to that of France, a lot has been done to break away from this "one-way" traffic and now they have collaboration with U.S. institutions, i.e. the University of California at Los Angeles (UCLA). At UCLA, they are working with Dr. Jane Chang, a professor in the Chemical Engineering department. They hope to expand to other fields.

A question was asked whether other Francophone countries were interested in joining the USAfrica Materials Research Society. The answer was a strong "yes".

## **Ethiopia**

Professor Abebe Mekurian presented for his country. He informed the group that Ethiopia has many social problems stemming from previous wars, drought, soil erosion and lack of funding. Education is a highly desirable goal for all Ethiopians. He stated that Ethiopia depends almost totally on imported goods and subsistence farming. "The government of Ethiopia annually earmarks funds for scientific research but records show very little financial support for Ethiopian scientists and therefore scientists mainly resort to foreign donor agencies", he said. Professor Mekurian expressed the need for African scientists to work together to build and maintain a steady flow of young scientist. He suggested that this type of collaboration as is being created in

Nairobi would go a long way in enhancing economic growth among African nations. He also introduced the idea of an “exchange program” among African institutions to enable continuity not only in one nation but also in the whole of Africa. He assured the group that Ethiopia will do all that is in its power to implement the recommendations of the Nairobi meeting.

### **The National Council for Science and Technology, Kenya**

Professor King’oriah presented a paper to emphasize the work already underway in Kenya. He stated that the Council has very limited resources to support this very important, but expensive, materials research. He said that Kenya has put in place teacher training facilities to encourage scientific knowledge at the lower levels of education. He emphasized the need to integrate science and technology with industry. He said that the collaboration between scientists and the private sector would go a long way in solving the immediate social problems in Africa. He pleaded with his government to make more funds available for scientific research. A question was asked, "what is the role of multi-nationals in Africa?" The answer was that "in sub-Saharan Africa, the emphasis is NOT on human resources development but more on industrial production. This creates a vacuum in Africa." he told the group.

### **South Africa**

Mrs. Nicoli Koorbonally of the National Research Foundation (NRF) presented a paper for her country, South Africa. “South Africa is well established in materials research and a number of scientists benefit from the various funding mechanisms of the NRF. The NRF’s mission is to be a dynamic, quality-driven organization, and to provide leadership in the support and promotion of research and research capacity development. We aim to uphold research excellence by promoting innovation and supporting basic and applied scientific research. We are very interested in creating meaningful networks across Africa and abroad” she told the group. She talked about the collaboration that already existed between South Africa and the SADC countries and other inter-governmental agreements. She talked about the role the NRF played both locally and internationally and said that South Africa still needed to improve its international competitiveness in order to become a major player in the global market. “This and other national challenges can only be achieved by, inter alia, investing in scientific knowledge, human resources and good infrastructure,” she said.

### **Swaziland**

Dr. Varkey of the University of Swaziland introduced himself and apologized for Mr. Ndlovu, the government representative who was unable to attend. He then delivered a paper on behalf of Mr. Ndlovu on Materials Research in Swaziland. “Swaziland is a land-locked small country and there is significant scientific research currently going on but not much on materials at this time,” he told the group. Professor Varkey welcomed the idea of an Africa-wide collaboration group. Even though he was not the government representative, Professor Varkey assured the group that Swaziland would fully participate in all the recommendations of the Nairobi meeting.

## **Uganda**

Dr. John Fred Kakule represented Uganda. Dr. Kakule started off by giving "special thanks" to Margaret-Anne Wampamba who was instrumental in getting Uganda to this meeting. "Uganda must move from an agrarian to an industrialized economy," he told the group. He said that funding for scientific research is very low in his country and that it is very difficult to get reliable data on either funding levels or participations. He told the group that there is a need to solicit private sector support for scientific research funding which will eventually enable the transfer of technology to various industries. He said that his country is moving towards the enhancement of scientific and technological research by promoting human resources development through advanced training both locally and abroad. "Uganda welcomes continuous collaboration among other institutions within Africa and other countries", he said. He said that Makerere University has a very active Physics Department and that the only thing missing is funding. "The university lacks good infrastructure to advance materials research," he concluded.

## **Zambia**

Zambia was represented by Dr. Zambezi. "Zambia is one of the countries in Africa that have been engaged in materials research for a long time. The National Institute for Scientific and Industrial Research (NISIR) is manned by a good group of materials research scientists", Dr. Zambezi explained. Dr. Zambezi told the group that even though materials science is taught as a minor course at the University of Zambia, it plans to offer a full undergraduate degree program. He said, "most of the research has been industrially based and there is an urgent need to do research within our universities". "Zambia welcomes the idea of an all-Africa collaboration initiative and we will do our best to contribute as much as we can," Mr. Zambezi concluded.

## **Zimbabwe**

Dr. Mambo presented the paper on what Zimbabwe is doing in materials research. "Zimbabwe is on track and on target with regard to science and technology. Zimbabwe is poised to realize its dreams through on-going research." He said that in Zimbabwe, materials research is supported by the state through universities and the private sector through parastatal bodies. He expressed the need for Zimbabwe to promote awareness of science and technology among the people of Zimbabwe. That Zimbabwe should invest more in science and technology. Also, he told the group that Zimbabwe is faced with the challenge of global competitiveness. Dr. Mambo told the group that the only way for Africa to forge ahead was through collaborations such as those being discussed here today.

## **USA (NSF)**

Dr. Adriaan de Graaf made a presentation on behalf of NSF. He talked about what NSF has done so far in attempting to enhance collaborations in materials research around the world. He talked of how NSF can help the African countries represented at this meeting to realize their dream of a materials research network across Africa. Dr. de Graaf encouraged the group to forge ahead in all aspects of materials research because that is one way Africa can join the industrialized world. "Materials research can enhance the development of your countries at a

level never envisaged before," he told the group. "NSF is ready to extend a helping hand but Africa has to show initiative and that is your job. NSF can point you in the right direction for collaborations but we cannot initiate the research activities for you," Dr. de Graaf went on to explain. "We are all very excited to be here. We are very grateful to our Kenya colleagues that agreed to host this meeting. We are looking forward to working with each one of you in the future," Dr. de Graaf concluded.

### **The Africa Virtual University**

Dr. Akidiva presented a brief paper on this university and what they can do to help the scientists in Africa. "This is a World Bank project. There is a liaison office at the World Bank, a facilitating office in Washington, D.C. and the headquarters in Nairobi", he told the group. Dr. Eisenstein visited the Africa Virtual University in the afternoon to see what is being done there. A brochure about the AVU is attached.