

Are there infrastructure for African and Caribbean Nanotechnology program?

Africa has a rich human and natural resources that are fundamental ingredients to nurture nanotechnology. Africa and the Caribbean like most part of the world totally lack the physical infrastructures to support nanotechnology. This is the reason why 70,000 well-educated and talented African researchers leave these shores for better research in developed world. Consequently in about a decade, Africa and the Caribbean will be devoid of any core scientific researchers through this process of brain drain. This problem is more than HIV/AIDS epidemic or Tsunami disaster in Asia. This is the major problem FONA Inc is addressing in our proposal for Nanotechnology Initiative for Africa and the Caribbean.

Mission: *Provide educational resources, skilled workforce, and physical infrastructure to enable first-class basic research, exploration of applications, development of new industries, and rapid commercialization of Nanotechnology discoveries*

A well-educated citizenry, a skilled workforce, and supporting infrastructures of instrument, equipment, facilities are very essential in the initiative. Nanoscale science, engineering and technology education can help to:

Produce the next generations of researchers, innovators and teachers
Provide the workforce of the future with math and science, and technological skills required to succeed with nanotechnology
Insure a well-educated citizenry and manpower that are equipped to make good decisions in a technology driven society. Here, an adequate arrangement should be to educate people of all levels and every age.

Equally important in supporting education and human resources development; it is important to support physical infrastructure development. Examples are universities, government labs and other research institutions. Building of other physical infrastructures to support nanotechnology is very critical in accomplishing this goal. The cost of this can be more than a university or government lab or businesses can bear but federal funding can take care of such state-of-the-arts physical infrastructures based on needs, to be available to all researchers/investigators nationally.

Activities

Focused education of kindergarten to universities, and the public on nanoscience. Special emphasis should be placed on building the-state-of-the-arts labs geographically distributed in zones for the public use. Specifically, education and provision of infrastructures should include:

Training of undergraduates, graduates and doctorate studies at universities and research labs through the broad research program as in vision 1.

Via training agencies, award fellowship to students to participate in nanotechnology program to allow flexibility in choosing training programs especially those that cross disciplines.

Support the training of technicians as nanotechnology moves into product and services to meet the growing demand in industry.

Bring nanoscience concept into education for students of all ages. This program will include: Research experience for teachers and students, nanoscience education programs supporting nanotechnology courses, free lectures for all people at specific institutions or government labs on a periodic basis, support the development of science centers and museum exhibits, video productions, and other approaches to learning outside of formal educational institutions.

Infrastructure

Establish geographically distributed user facilities to provide all researchers access to advanced

instrumentations for fabrication, characterization, modeling and stimulation of nanoscale and nanostructures devices, materials, systems and processes. The infrastructures will include: Those by government ministries like nanoscale science and research centers available to every user based on merit.

Nanotechnology users network to provide instrumentations for characterizations, properties and expertise and the network for computational nanotechnology consisting of groups of universities that together support computational research, as well as education, modeling and stimulation tools that can be accessed via the web.

Support additional facilities within the federal laboratory enterprise dedicated to nanotechnology R & D.

Education

The initiative will create an environment that allows for multi-disciplinary education, teacher training and development of curricula and instructional materials. The initiative will further be involved in the training for advanced R&D in nanotechnology and support nanotechnology industrial needs. The component of this will involve:

Taking advantage of existing programs and forming new partnerships to bring students and teachers into the research lab. Bringing nanotechnology researchers together with teachers and education researchers will provide mutual benefits by strengthening educational programs and providing fresh research perceptives.

The creation of first rate university facilities for learning and teaching of nanoscience with federal funding as with any full-fledged university. Such a university will train scientists-teachers for the secondary schools and undergraduate levels who can introduce nanoscience and nanoengineering concepts into schools and undergraduate classrooms. It will serve as a clearinghouse for curricula materials, instructional methods and activities in nanotechnology education.

Promoting partnerships between industry, education and training to ensure that nanotechnology firms have access to highly skilled workforce they need, and workers have access to the training needed for careers in the industry.

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