

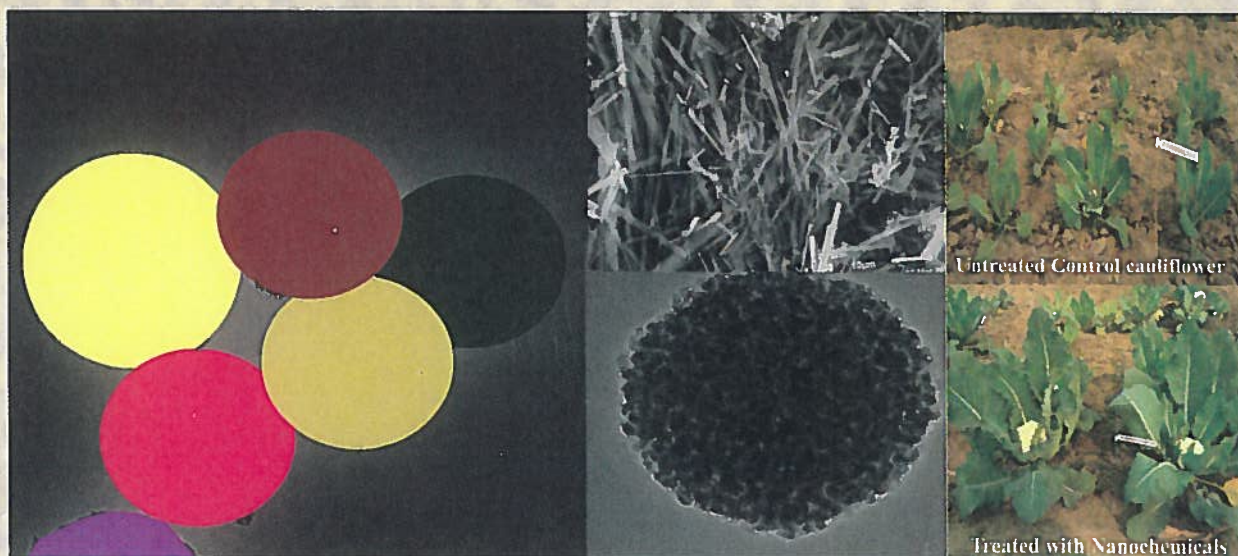


ALIGARH NANO-V & STEMCON-16

International Conference on

NANOTECHNOLOGY & STEM-ER

ABSTRACT BOOK



March 12-15, 2016

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Dr. Shakeel Khan
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Prof. Anil Pradhan
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Centre of Excellence in Materials Science (Nanomaterials)

Department of Applied Physics
Aligarh Muslim University, Aligarh





THE OHIO STATE UNIVERSITY

Prof. Sultana N. Nahar

**Department of Astronomy
The Ohio State University
USA**



Message

On behalf of the Ohio State University and Aligarh Muslim University, I extend heart warming welcome to all participants to the joint International Conference of Aligarh Nano V and STEM (Science, Technology, Engineering, Mathematics) Education and Research at Aligarh Muslim University during March 12-15, 2016. It is a unique combination of two approaches of the same objective resulted from OSU's development under a prestigious USIEF award and partnership with AMU of a novel dual degree program that includes) world class teaching skill for undergraduate students and ii) carry out cutting edge research, both with equal weight, and AMU's leadership in pioneering the nanotechnology research in India with inventions, patents, and training students and researchers. We are confident that the conference will provide the vibrant forum for demonstrations and exchange of innovative ideas for the educators and researchers in STEM, and that participants will enjoy the experience of Aligarh."

Prof. Sultana N. Nahar

Indo-US Collaboration in STEM Education and Research: Training World-Class Research Faculty at Higher Education Institutions in India

Anil Pradhan The Ohio State University

Training world-class research faculty at higher education institutions is a vital imperative in emerging nations. Supported by an award from the US-India Education Foundation (USIEF), We describe a plan to establish STEM Education and Research (ER) Centers at Indian universities. The goal is to train the next generation of STEM faculty in India in teaching and advanced research at the level of world-class institutions. Owing to the urgency and immensity of the needs for higher education in India, this plan differs from existing degree or exchange programs. It envisages an accelerated time frame within two years of an intensive ER program for Indian graduate students to embark on careers as STEM research faculty. Research and innovation at the STEM-ER centers would be aimed at laying general scientific infrastructure, as well as to meet specific needs of industry.

A pilot project between the Ohio State University (OSU) and the Aligarh Muslim University (AMU) was launched in 2013 under the Indo-US 21st Century Knowledge Initiative (formerly known as the Obama-Singh Initiative). Among the goals and programs of the Indo-US STEM-ER project are:

- Establish the highest standards in education and scientific research: The OSU-AMU collaboration is to set specific metrics to gauge teaching and research.
- Novel two-year dual-degree PhD + MEd program: PhD in STEM discipline at AMU and research at OSU, coupled with a specially designed India-specific Masters of Education program to train faculty to teach at undergraduate level.
- No brain drain: Selected AMU students return to India to complete the second year of the program, and prepare as prospective STEM faculty while continuing research collaborations at OSU.
- Indo-US Consortium: Several universities are expected to participate to form a consortium to expand the program nationally in India.
- Digital Education: The highly trained graduate students are particularly suited enable digital education for large numbers of students, as intermediaries between the so-called "Massive Open On-line Courses" (MOOC) and face-to-face interaction with in-class students at all levels.
- International Participation: The OSU-AMU collaboration may be extended other countries with similar needs for training STEM faculty.

Details on the project website:

<http://www.astronomy.ohio-state.edu/~pradhan/Stem/main.html>