



"STEM EDUCATION AND RESEARCH AT AMU UNDER US INDIA EDUCATION FOUNDATION"

Presented by AMU Members Under the Project



Visit by Dr. Ellen Carpenter, NSF

Aligarh Muslim University

Aligarh, India

November 20, 2017

Support: USIEF, OSU, OSC, AMU



**"OBAMA-SINGH 21st Century Knowledge Initiative
Award of US India Education Foundation (2013-2017)**

**"THE STEM-FACULTY PROJECT: TRAINING THE
NEXT GENERATION OF STEM FACULTY AT
HIGHER EDUCATIONAL INSTITUTIONS IN INDIA"**

INITIATION: OBAMA-SINGH STEM ER PROJECT, AMU, Sep 2013



- Project grew interest in many: Presentations
 - Public events with educators in Delhi
 - Universities: Delhi, Kashmir, Jammu, Mata Vishnu
 - Research Institutes: TIFR, IIA, Science and Technology- Pune. Central Institute of Fisheries Education
 - Private institutes: Jain Univ, Indraprastha Institute of Information Technology, Thakur's College of Engineering

MOA BETWEEN OSU AND AMU, Signed in Nov 2013

- Signed at AMU, 2013 (OSU: William Brustein, Pat Osmer, David Williams, AMU: Pro-VC, VC)
- Dual Degree Program:
- AMU: OSU-AMU Center of Excellence: Smart Class-rooms, other facilities



<http://www.astronomy.ohio-state.edu/~nahar/obama-singh.html>

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

Inauguration of OSU-AMU STEM ER CENTER OF EXCELLENCE, Wildlife Center, Sep 2013



Shared:

- Smart class-room for distant learning
- Video conference room, 1 faculty office
- Fellows took classes in Summer 2014 through Distant e-learning

OSU introduced a new degree, MEd, for the STEM FACULTY TRAINING PROGRAM in December 2013



- GOAL: Train postgraduate students to world-class teaching skill and to lead in advance research in Indian Universities
 - We developed a new curriculum for a 2 years dual-degree MEd-STEM program - customized for Indian universities
 - CAA approved the curriculum in December 2013

OSU introduced a new degree, MEd, for the STEM FACULTY TRAINING PROGRAM in December 2013

- Enrollment Credits:

- Courses on Teaching 50%

- i) Courses for high school students were upgraded for undergraduates

- ii) Formulated for minimum course work, but with more experience based direct study

- Postgraduate Research in STEM discipline 50%

- i) A chapter in the Ph.D. thesis

- ii) OSU advisor is an official co-advisor of the Ph.D.

Most attractive part for most of the institutions

THE FIRST BATCH OF STEM ER FELLOWS



- Selected 4 AMU postgraduate students, 2 males and 2 females,
 - 1. Asim Rizvi (Male), Biochemistry: Prof. Imrana Naseem
 - OSU Radiology, Advisor: Prof Qien Wang

THE FIRST BATCH OF STEM ER FELLOWS



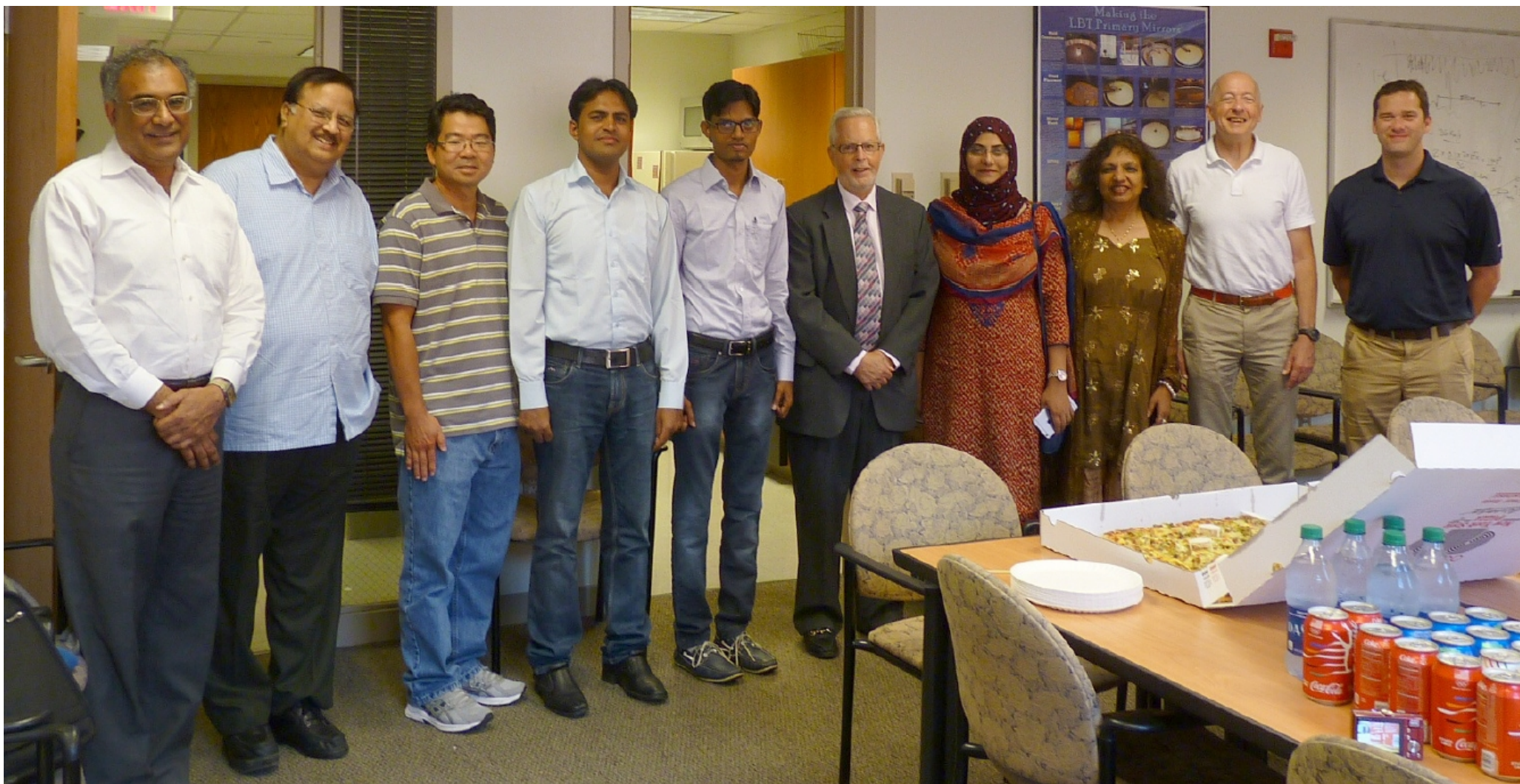
- 2. Hala (Female), Physics, Advisor: Prof. Tauheed Ahmed
- OSU Astronomy & NIST, Advisor: Prof Sultana Nahar
- 3. Malik Azeem (Male), Zoology, Advisor: Prof. Afzal
- OSU Molecular Genetics, Advisor: Prof Guramrit Singh
- 4. Nida Rehmani (Female), Biochemistry, Advisor: Prof. Hadi
OSU Radiology, Advisor: Prof Altaf Wani

THE FIRST BATCH GRADUATES



- Received MED-STEM degree at OSU in Spring 2016:
- Dr. Asim Rizvi, received his Ph.D. degree at AMU, 2016
- Dr. Hala, received his Ph.D. degree at AMU, 2016
- Malik Azeem, to submit Ph.D. thesis, 2017
- Dr. Nida Rehmani, received Ph.D. degree at AMU, 2017

THE SECOND BATCH OF STEM ER FELLOWS



- Selected 4 AMU postgraduate students, 2 males and 2 females,
 - 1. Parvez Alam (Male), Biotechnology: Prof. Rizwan Khan
- OSU Chemistry, Advisor: Prof Chirstopher Jaroniec
 - 2. Sabiha Parveen (Female), Chemistry, Advisor: Prof. Farukh Arjmand

THE SECOND BATCH OF STEM ER FELLOWS



- OSU Chemistry, Advisor: Prof James Cowan
- 3. Swaleha Naseem (female), Nanotechnology, Advisor: Profs. Wasi Khan and Shakeel Khan
- OSU Physics, Advisor: Prof Ronald Kawakami
- 4. Taqseer Khan (Male), Mathematics, Advisor: Prof. Mursaleen
- OSU Mathematics, Advisor: Prof. Jan Lang

OSU RESEARCH IN RADIOLOGY: ASIM RIZVI



Research at OSU: "On the breast and lung cancers in rats and immunity development using vitamin D."

- The new finding is under investigation at OSU
- Recipient of Dr. Nurul Islam prize 2016 under Indian National Academy in Biomedicine
- Guest teacher at women's college, • CISR Fellow 2017,

OSU RESEARCH IN ASTRONOMY: HALA



Research at OSU: "Calculation of collision strength for electron impact excitation using relativistic Breit-Pauli R-matrix (BPRM) method for Si IX"

- Two additional projects at NIST, Washington

- Recipient of IAEA award for workshop at ICTP, Italy
- Now Postdoc at NIST

OSU RESEARCH IN MOLECULAR GENETICS: MALIK AZEEM



Research presentation at OSU: "Study of RNA protein complexes responsible for modulating the expression of genes"

Remark by OSU Advisor Guramrit Singh:

"Malik Azeem is the STAR of the STEM ER Program"

- Made potential discovery

OSU RESEARCH IN RADIOLOGY: NIDA REHMANI



Research at OSU: "Copper dependent enhancement of DNA damage and X-ray induction by L-DOPA and Dopamine: Putative neurotoxic mechanism" (published)

- S.N. Nahar best presenter prize, International Nano V and STEM ER conference, Aligarh, 2016
- Applying for a position

OSU RESEARCH IN CHEMISTRY: PARVEZ ALAM



Research at OSU: "Effect of copper binding on human protein" "

Remark by OSU Advisor Chris: "Has made a potential discovery of protein reaction to Cu "

- Postdoc at IIT, Delhi

OSU RESEARCH IN CHEMISTRY: SABIHA PARVEEN



Research at OSU: "Design and Synthesis of chiral R/S-metallo drug: Enantiomeric discrimination with CT-DNA, selective cleavage of G-Quadruplex telomeric DNA and kinetic studies of cleavage of puC19 DNA""

Remark by OSU Advisor Jimmy: "She is a quck learner, has found prospective cancer drug using Cu complexes"

OSU RESEARCH IN PHYSICS: SWALEHA NASEEM

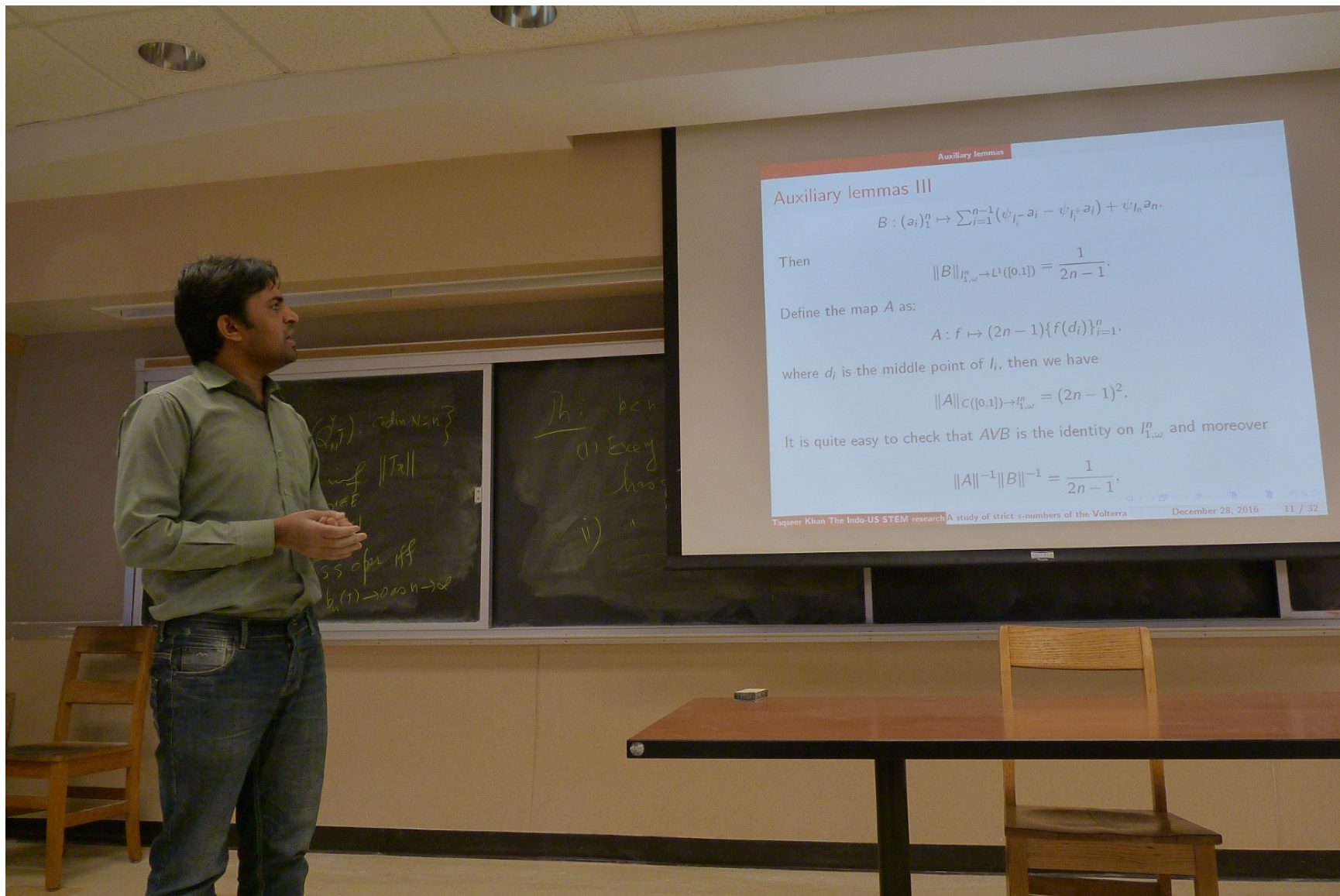


Research presentation at OSU: "Growth of TiO₂ thin films through MBE and study the optical and magnetic properties"

Remark by OSU Advisor Ronald: "She has learnt a lot, unusual in such a short time. ... Her findings with TiO₂ have not been studied before and plan for a publication"

- Results are presented at an American Physical Society meeting

OSU RESEARCH IN PHYSICS: TAQSEER KHAN



Research presentation at OSU: "A Study of strict s-numbers of the Volterra operator"

Remark by OSU Advisor Jan: ""He has opened the door to paradise - he can enrich the field of s-numbers of Volterra operators in approximation theory"

- Has got Assistant Professorship at Jamia Millia Islamia, Delhi

STEM ER Project: Nahar, Pradhan taught Research Oriented course with computational workshops, AMU, 2014-2016

Course Banner & Certificate ceremony



OBAMA-SINGH 21st Century Knowledge Initiative

A short term course on

RADIATION PHYSICS: ASTRONOMY TO BIOMEDICINE

by
Prof. Sultana N. Nahar and Prof. Anil K. Pradhan
(Ohio-State University, USA)

February 10-March 8, 2014 **Conference Hall, Department of Physics,
Aligarh Muslim University, Aligarh**



University of Kashmir joins the Indo-US consortium, 2016

- Vice Chancellor Prof. Andrabi and Dean of Academic Affairs Prof Wani



Saudi Arabia: MOHE Consideration

- Appreciation of Minister of Higher Education, Dr. Khaled Al-Anqari, Deputy Minister: "Super super good" program



Conference: STEM ER PROJECT CO-SPONSORED & CO-ORGANIZED ALIGARH NANO-IV INTERNATIONAL 2014

OHIO STATE UNIVERSITY

ALIGARH MUSLIM UNIVERSITY ALIGARH

**Inauguration of
ALIGARH NANO-IV INTERNATIONAL 2014**
International Conference on Nanoscience & Nanotechnology

Co-Sponsored by:
OSU (USA) - AMU STEM EDUCATION & RESEARCH CENTER
Under Indo-US Collaborative Obama Singh 21st century knowledge initiative awards
DRDO, DST -Nano Mission, CSIR-CEERI, Pilani, CST-U.P., UGC (SAP - DRS I), TEQIP-II, ICMR, Macwin India

Date: March 8, 2014
Time: 9:00 A.M.

Venue:
KENNEDY HALL AUDITORIUM

Centre of Excellence in Materials Science (Nanomaterials), CST (UP)
Department of Applied Physics
Zakir Husain College of Engineering & Technology



Conference: PROJECT HELD THE FIRST INTERNATIONAL CONFERENCE ON STEM-ER JOINTLY WITH ALIGARH NANO-V INTERNATIONAL 2016



The Aligarh Muslim University, Aligarh, India

announces International Conference On

**Nanotechnology (ALIGARH NANO-V) and STEM-Education and Research (STEM CON-16)
(March 12-15, 2016)**



THE OHIO STATE UNIVERSITY

In partnership with The Ohio State University (OSU) in Ohio, USA and CEERI Pilani, the Aligarh Muslim University (AMU) is organizing an International Conference on Nanotechnology and STEM-ER (Science, Technology, Engineering and Mathematics-Education and Research) during March 12-15, 2016. More than fifty foreign delegates are expected to attend. The first two days (March 12 & 13, 2016) would be devoted to Nanotechnology and its applications, the next two days (March 14 & 15, 2016) to on recent advances and methods to improve the teaching and research standards in STEM subjects in universities in India and other developing countries.

In a pilot project (STEM-ER) funded by the US-India Education Foundation (USIEF) under the title '21st Century Knowledge Initiative', OSU and AMU have started a two-year dual PhD and Masters of Education (Med-STEM) degree programs. Four AMU PhD research students, selected under a very strict criteria have already completed courses of the first academic year at OSU and returned to AMU to continue the second year for the dual PhD+Med (STEM) degrees. The aim of the project is to create world class faculty for teaching and research at Indian Universities.

The Centre of Excellence in Materials Science (Nanomaterials) at AMU supported by Council of Science and Technology (CST) Uttar Pradesh is a leading national centre for Nanotechnology research with several patents (published) and awards to its credit. The Centre successfully organized four conferences in past with active participation of foreign and national experts on Nanotechnology.

Under Patronage

Lt. Gen. Zameer Uddin Shah
Vice Chancellor, AMU

Brigd. S. Ahmed Ali
Pro-Vice Chancellor, AMU

Conference Themes

NANOTECHNOLOGY

- ✓ Nanotechnology for defence applications
- ✓ Synthesis and characterization techniques of nanomaterials
- ✓ Nanotechnology for harnessing energy
- ✓ Nanomaterials in food, agriculture and water purification
- ✓ Nanoparticles for engineering materials
- ✓ Magnetic nanoparticles and applications
- ✓ Nanoparticles based drug targeting
- ✓ Nanomedicine and health-care
- ✓ Nanoelectronics and nanosensors
- ✓ Bionanotechnology
- ✓ Nanocosmetics and house hold products
- ✓ Graphene and its nanocomposites
- ✓ Organic and inorganic nanocomposites

STEM-ER

- ✓ US-India STEM Faculty Training Project
- ✓ STEM Teaching at Indian Universities
- ✓ Indo-US Universities Consortium for STEM-ER
- ✓ International STEM-ER Initiatives
- ✓ Digital STEM education

For more details please visit:
Websites:

www.aligarhnano.com

www.astronomy.ohio-state.edu/~pradhan/STEM/main.html

Contact us at: aligarhnano@gmail.com

Support: "US-India Education Foundation, AMU"

Prizes: Best Oral and BestPoster presentations

Conference Chairs

Nanotechnology (ALIGARH NANO-V)

1. Prof. Alim H. Naqvi (Convener)
E-mail: alimhnaqvi@yahoo.com, Mobile No.: +91-9219505388
2. Prof. Ameer Azam (Convener and Chairperson Applied Physics Deptt.)
E-mail: azam2288@gmail.com, Mobile No.: +91-9319788742
3. Prof. Parvez Qamar Rizvi (Co-convener)
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4. Prof. Jamil Akhtar (Co-convener)
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11. Dr. Zafar Hasan (Joint Organizing Secretary)
E-mail: zafaramu@gmail.com, Mobile No.: +91-9456096093

STEM-ER (STEMCON-16)

1. Prof. Anil Pradhan, Ohio State University, USA (Convener)
E-mail: pradhan.1@osu.edu, Mobile No.: 1-614-292-5850
2. Prof. Nesar Ahmad, AMU, Aligarh (Convener)
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3. Prof. Sultana N. Nahar, Ohio State University, USA (Co-convener)
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5. Prof. Rahimullah Khan, AMU, Aligarh (Co-convener)
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6. Prof. Altaf Wani, Ohio State University, USA (Co-convener)
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10. Dr. M. Mohsin Khan, AMU, Aligarh (Joint Organizing Secretary)
E-mail: khanmohsinin@gmail.com, Mobile No.: +91-9634367427

Key Dates

Last date of Abstract Submission : January 1, 2016
Acceptance Notification : January 15, 2016
Last date for early bird registration : February 1, 2016
Dates of Conference : March 12 - 15, 2016

Registration Fees

Type of Visitor	Indian Delegates Early Bird (Upto Feb. 1, 2016)	Indian Delegates Late Entry (After Feb. 1, 2016)	Foreign Delegates Early Bird (Upto Feb. 1, 2016)	Foreign Delegates Late Entry (After Feb. 1, 2016)
Students	Rs. 2500/-	Rs. 2500/-	US\$ 150/-	US\$ 200/-
Academia / R&D Institution	Rs. 4000/-	Rs. 5000/-	US\$ 200/-	US\$ 250/-
Industry	Rs. 10000/-	Rs. 11000/-	US\$ 250 /-	US\$ 350/-



INTERNATIONANAL CONFERENCE ON STEM ER, 2016



International conference on Emerging Trends in Biomedical Sciences, Biochemistry Department, 2016



The project has led to the foundation of the
”**INDO-US A.P.J. Abdul Kalam Centre of Excellence for
STEM EDUCATION and RESEARCH**”

- Joint partnership of OSU and AMU
- Established: 2013
- Formalized legal and financial structures, and Named
”APJ Abdul Kalam Center”, 2017



- Will carry out the year long ”Monitoring and Evaluation” process of the ”Women in STEM Roadshow” project of US Department of State

