

National seminar on

# 'Global Contribution of Muslim Women in Natural and Social Sciences'

organized by Aligarh College of Education, Aligarh

Prof. Sultana Nahar: The Lady with Vision and Action



Presented by:

**Sabiha Parveen**

Ph.D. Scholar

Senior Research Fellow,

Indo-US STEM-ER Fellow, 2016-17

Department of Chemistry,

Aligarh Muslim University

## Prof. Sultana Nahar: The Lady with Vision and Action

❖ Sultana Nahar, an atomic astrophysicist at The Ohio State University, USA, received her B.Sc. Hons. in Physics and M.Sc. in theoretical Physics from Dhaka University, standing the first position in both and holding the record for the first woman to achieve them.

❖ She received her M.A. in Quantum Optics and Ph.D. in atomic theory from Wayne State University, USA. At Wayne State, **Knoller Fellowship in Physics**, she received the **Thomas Rumble University Graduate Fellowship**, and the **Daniel Gustafson Memorial Award** for Excellence in Teaching by a Graduate Student.

❖ After a postdoctoral position at Georgia State University, she moved to the Ohio State University with a fellowship from the College of Physical and Mathematical Sciences.



## **Prof. Sultana Nahar: The Lady with Vision and Action**

- ❖ Dr. Nahar' research focuses on atomic processes of photoionization, electron-ion recombination, theoretical spectroscopy for the Breit-Paul R-matrix method, and the resonant nano-plasma theranostics (RNPT) method for cancer treatment.
- ❖ She has published around **159** scientific articles and is the co-author of the textbook “Atomic Astrophysics and Spectroscopy”. She also has an online database titled NORAD-Atomic-Data.
- ❖ She was awarded ‘**Outstanding Research Mentor Award**’.
- ❖ She is an **APS Fellow** (American Physical Society), recipient of the highest honour gold medal from the Topical Society of Laser Sciences.
- ❖ Recipient of the 2013 **John Wheatley Award**.



## Prof. Sultana Nahar: The Lady with Vision and Action

### GLOBAL OUTREACH:

- **Global Network of Physicists:** Founder of a network of under represented physicists from 23 Asian and Islamic countries to promote APS and provide physics related information
- **Global Society for Muslim Women in Science:** Founder of the **International Society of Muslim Women in Science** to provide various information on inspiring news, opportunities for collaborative research, conference attendance, jobs, scholarships and encourage to science profession for over 200 members from **28** countries.





## GLOBAL OUTREACH:

- Co-founded (with Professor Lota El Nadi, Cairo University, **International Society of Arab Women in Science**, over 250 member from 7 Middle Eastern countries, 2014.
- **Global Research Activities**: Research guidance and collaboration internationally in universities in Bangladesh, Chile, Egypt, France, Germany, India, Iran, Iraq, Mexico, Turkey, Saudi Arabia



# **ESTABLISHMENTS OF GLOBAL STEM EDUCATION & RESEARCH PROGRAMS:**

- 1. BANGLADESH: PROMOTER OF PHYSICS RESEARCH & STEM EDUCATION**
- 2. EGYPT: PROMOTION & COLLABORATION FOR RESEARCH & EDUCATION**
- 3. PALESTINE: PROMOTION OF STEM RESEARCH & EDUCATION**
- 4. USA: PROMOTION OF PHYSICS & ASTRONOMY RESEARCH & EDUCATION**
- 5. COLLABORATION WITH TURKEY**
- 6. COLLABORATION IN STEM EDUCATION & RESEARCH WITH SAUDI ARABIA**
- 7. COLLABORATION WITH UNITED ARAB EMIRATES**

## 8. INDIA: PROMOTION & COLLABORATION IN PHYSICS RESEARCH, STEM EDUCATION

- Long term Research collaboration with Indian Institute of Technology at Roorkee
- Founder & sponsor of various recognition programs for faculty members & students
- A member of the consortium of US and Indian universities for STEM education and research initiatives under Indo-US program.
- **Indo-US STEM-ER Project (Collaboration between Aligarh Muslim University-The Ohio State University, USA).**

The objective is to enhance educational excellence and collaborative research to address global challenges in STEM (Science, Technology, Engineering, Mathematics) areas by training Indian PhD students for world-class faculty by OSU faculty members.



- A group of four highly qualified research students in science and engineering at AMU was selected in the first-year batch in 2014. They joined the main campus of OSU in Columbus, Ohio for two semesters for graduate courses in state-of-the-art teaching methodologies and advanced scientific research in their respective STEM disciplines, while retaining their status as AMU PhD students.

- A second batch of four AMU students has also been supported in 2016 by the USIEF grant for one semester of research in respective STEM disciplines under the supervision of OSU faculty advisers. Research carried out at Ohio State constituted one chapter in the PhD theses for all AMU students under the program.





## APJ Abdul Kalam for STEM Education & Research

➤ The Aligarh Muslim University (AMU) has established a Centre of Excellence in Science, Technology, Engineering, Mathematics - Education and Research (STEM-ER) in consonance with the Ohio State University (OSU), US, under the ambitious Indo-US 21st Century Knowledge Initiative, earlier known as Obama Singh knowledge Initiative and supported by the US-Indo Education Foundation (USIEF). The STEM-ER project aims at training graduate students to become the world class teachers and researchers at the University level.

➤ With this centre in saddle, the Aligarh Muslim University will become an "Innovation-Incubator" for advanced teaching and learning in STEM subjects which will ultimately provide fillip to the local, state, national and international STEM Education outreach.



## Women in STEM Roadshow in India 2017-18

The current status of women in higher education has recently been described in the **All India Survey on Higher Education (AISHE 2014-2015)** (Ministry of Human Resource Development of Higher Education, New Delhi, 2016).

Muslims constitute 14.5% of the Indian population, only 4.5 % are enrolled in higher education (male and female), as compared to other social groups. The Muslim female proportion in STEM is likely to be less than 1%, despite their overall population in India of 7.5%.

➤ As part of **Indo-US Center for STEM Education and Research** jointly by AMU and OSU (re-named the APJ Abdul Kalam Center), will be organizing “Women in STEM Roadshow” 2017-18, the 5- year long collaboration towards outreach for Women in STEM following the Roadshows.

➤ APJ Abdul Kalam Center was able to receive \$75000 grant from the US Department of State for this roadshow program.



- **The OSU-AMU effort would be a great exemplar for the Roadshow participants, and provide them with opportunities for further STEM training in the U.S. and India.**
- Another basic element of this proposal would be exposure to STEM research from elementary to advanced level.
- Women in STEM fields lag far behind their male counterparts, the problem is particularly acute for women from minorities and disadvantaged groups.
- The primary reasons are the deeply regressive socioeconomic and cultural factors in the lives of women from minority and/or poor backgrounds.
- As young girls they are discouraged and systematically discriminated against in favor of males from similar backgrounds, and lack the support necessary to remain in environments that may be otherwise conducive to the advancement of women.
- Therefore targeting these subgroups in conducting the STEM Roadshows might yield the most benefits.

## Conclusion

Until the middle of nineteenth century, girls and women were educated only for traditional household works. Now, the society is witnessing changes in the role-status of women. There is greater emphasis on education of girls and women in the same way as we educate boys and men. The modern-day parents want to fulfil the aspiration of their children without gender parity.

**Dr. Nahar** says:

**“If we come together, we can make advances faster, much faster, than in isolation,”** with this vision of Dr. Nahar we should come together and insist on exercising our civil, social, political and economic rights. This will help improve the overall condition of women in the society. We can hope for better days while all women of our country will be enlightened and educated.





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