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SRESA Newsletter

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New 5th International Conference on Reliability Safety and Hazard – 2024 (ICRESH-2024), 21 – 24, Feb. 2024, Mumbai

Editor
Prabhakar V. Varde

SRESA Mission

One of the important aims of SRESA was to develop standards, codes, and guides in risk and reliability for engineering as well as societal applications. We, at SRESA are at the advanced stages of publication of first SRESA standard on "Probabilistic Risk Assessment of Nuclear Plants".
Publication of this SRESA standard will set the ball rolling for new standards, codes, and guides. As such the efforts are on to develop the second SRESA standard / Guide on Elevator Safety.

From the President's Desk ....

I have more than one good news to share with you in this issue. First, our preparations for the 5th ICRESH-2024 are in full swung and hope to welcome you during 21-24 February in Anushaktinagar, Mumbai.
Second, I am happy to share with you that we have launched new SRESA website (link http://www.sresa.org.in) We took this opportunity to even develop and launch ICRESH-2024 website (link http://www.sresa/org.in/ICRESH-2024/). Third, we are moving to the new address for SRESA. This is a virtual office location that facilitate hosting of meetings and use of the space also along with having new address. Last but nor the least, in fact, from long term perspective this is one of the important milestones in SRESA development history. We have been working on development of Code, Guides and Standards. In this direction drafting of the first SRESA standard on 'PRA of Nuclear Power Plants' has been completed and it under considerations with AERB and BIS for publication as national standard. This is an important development as the publication protocol for national documents will set the procedure for new standard, codes and guides on subjects of national importance. Further, we are all eager to meet all the SRESA life members along with many dignitaries from Indian and abroad during ICRESH-2024 in Mumbai.
This is our 4th SRESA Newsletter and last one of 2023.
I take this opportunity in advance to WISH YOU A VERY HAPPY NEW YEAR-2025. For details of ICRESH-2024 please refer the Brochure in this news letter

- **Prabhakar V Varde**

In this issue ....

An ocean of opportunities: Amity Institute of Nuclear Science & Technology, Amity University Uttar Pradesh

Archana Yadav and Alpana Goel, AMITY, AINST, Noida

1.0 Introduction – About the Institute

Amity Institute of Nuclear Science & Technology (AINST), Amity University Uttar Pradesh (AUUP) was set up in 2009 after the 123agreement [1] to augment the requirements of a nuclear workforce which would be required once the power program is on expansion. Subsequently through the Nuclear security Summits [2] were announced for global cooperation for enhancing the security of nuclear materials and reducing their vulnerability. Our mission and vision are to produce industry ready and relevant graduates who can support the promulgation of this technology into various sectors. Since the inception AINST has been producing graduates and postgraduates in nuclear science and Technology (NST) who have grown up to support the Atoms for Peace Program [3] and Nuclear Renaissance not only Nationally but globally. Our. graduands are spread across the globe as facility managers, quality assurance managers, engineers, doctoral candidates (Under Department of

Atomic Energy (DAE) graduate fellowship scheme and abroad) Energy (DAE) security specialists, analysts, and scientists.

We have excellent collaborations with national and international agencies working in the sector of nuclear science and technology. We have collaborations to organise activities with various funding agencies like Indian Association of Nuclear Chemists and Allied Scientists (IANCAS), board of research in nuclear sciences (BRNS), Civilian research development foundation (CRDF) Global, International Atomic Energy agency (IAEA) Vienna, world institute for nuclear security (WINS) Vienna, partnership for nuclear threat reduction (PNTR) United States (US) Department of State (DoS), Defense threat reduction agency (DTRA) US Department of defence(DoD), Oakridge National Laboratory (ORNL) to name a few.

We have sponsored research projects from SERB, UGC-DAE-Consortium for Scientific Research (CSR), CRDF Global, and a million-dollar laboratory upgrade project from DTRA, US.

2. 0 Programs

AINST offered B.Tech., M.Tech. and B.Tech.+ M.Tech. (Integrated) (erstwhile Dual Degree) programs in NST since 2009. To date we have produced more than 90 graduands across the three programs [4]. The number looks insignificant spanning a period of 14 years, but each of our alumni are the gems of the industry. Apart from academics our students have achieved awards and scholarships at various national and international platforms [5]. AINST also offers part time and full-time doctoral degrees in Nuclear and allied sciences. Our Doctoral candidates are working with various international agencies like Nuclear Power Corporation of India Limited (NPCIL), University of Delhi, University Hospital Southampton, Tata Memorial Hospital to name a few.

Our students are recipients of prestigious international scholarship schemes like Marie Curie, Erasmus Mundus, SERENA Erasmus to pursue masters in institutions of repute across the globe. Students have also won accolades to their alma mater by participating in competitions organized by the International Atomic Energy Agency (IAEA), Vienna, Waste Management Symposia, DAE essay writing competitions. Our students have won the best Summer Project (consecutively for two years), under the VSR program organized by TIFR, Mumbai.

3.0 Courses offered.

The course curriculum is at par with the training school courses. Due to this every year (since 2017) one of our students gets selected to be inducted as trainee scientific officer in DAE units. The first two years of the undergraduate program are common with other engineering programs and subsequently third year onwards majority papers offered are of nuclear specific skills to be acquired. For the master's students beginning from the fundamentals of nuclear sciences advanced concepts are introduced. As per the mandate of the UGC the students are offered a basket of courses to choose from. Some of the core courses are as follows for UG and PG programs.

UG level:	PG Level:
1. Physics and chemistry of nuclear fuels	1. Nuclear physics
2. Nuclear fuel fabrication & reprocessing	2. Physics and design of nuclear reactors
3. Radiation detection and measurement	3. Fast breeder reactors and accelerator driven subcritical systems.
4. Reactor physics	4. Reactor safety and reliability
5. Nuclear power reactor systems	5. Nuclear fuel cycle and waste management
6. Radiation protection and health physics	6. Accelerator physics and technology
7. Particle Accelerators	7. Interaction of radiation with matter and nuclear detectors
8. Radiation damage in reactor materials	8. Nuclear techniques
9. Fission & fusion processes for nuclear energy	9. Plasma Physics and Fusion Reactors
10. Radioisotopes-production and Applications	10. Nuclear physics and its applications
11. Nuclear techniques and their applications	11. Nuclear Power Engineering

Apart from the core courses all programs are supported by nuclear radiation measurement and detection laboratories. We have state of the art laboratories at our institution.

Recently under our Amity University, Texas A & M university, ORNL and DTRA partnership, there has been a major upgrade of our existing nuclear radiation detection laboratories.

The laboratories have multiple sets of advanced radiation detectors like sodium iodide (NaI (Tl) scintillation spectrometers, high purity germanium detectors, Cerium Bromide scintillation detectors, Geiger Muller (GM) counters and radio isotope identification devices (RIID). We are also in a process of setting up remotely accessible laboratories [6] which will help students perform the fundamental radiation detection and shielding characterization experiments from the comfort of their home or academic institution by logging on to the online platform. This unique facility will give insights of the setup that is being used for radiation detection and fundamental characterization of radiation and the detection phenomena. This will give hands on experience to the students on majorly all type of detectors like scintillation detectors, high purity germanium detectors, GM counters and alpha analyst for alpha spectroscopy.

3.0 RSO Certification course

Owing to the competency of the faculty and the infrastructure present at AINST, Radiological Physics and advisory division of the Bhabha Atomic Research Centre, has approved for the conduct of Radiological Safety Officer (RSO) - level 1 certification at AINST. This is for research and column scanning applications. The first RSO certification at AUUP was held in the month of June 2023, and the success rate was around 80%. This is attended by more than 35 candidates. The courses were taught by both experts from both DAE and Amity.

About the Faculty

The faculty is an amalgamation of theoretical & experimental nuclear physicist, along with nuclear engineers, scientists from Homi Bhabha National Institute and scientific officers who have served DAE Institutions for a larger part of their professional life. We have eminent DAE Scientists and Researchers as our Honorary Professors who support our course content development and delivery.

The faculty are involved in both academic teaching, training and research providing holistic development of the students. We have been supporting our students in getting not only world class education, but excellent training opportunities in research institutions and organizations and relevant industry. We have been organizing sessions from industry and academia experts to help students get insights into the latest in research and development in the sector.

Faculty development programs, international training and interactions with eminent experts ensure faculty are updated with regards to the latest in the industry. The faculty is on board many national and international levels committees and contributes to the mission and vision of the organizations like IAEA, WINS, etc.

4.0 Institution of the Uniqueness of the

Owing to our strong collaboration with the national and international agencies working in the nuclear safety and security sector we have been organising workshops seminars training programmes for student's research scholars working professionals [7]. We collaborate with national and international agencies to set up programs of global standards promoting the word of safety and security in the nuclear industry. AINST is listed in the international nuclear security education network (INSEN) [8] set up under the ages of International Atomic Energy agency (IAEA), Vienna. We have been contributing both for the development of documents courts and conducts end programs for both academia 10 industry professionals. Faculty of a AINST has been on board many international working groups contributing towards development of safety standards and guidelines at the IAEA.

We have organised the following workshops/seminars /training programs in collaboration with national and international agencies since 2015. Even during the times of pandemic, we have made sure the momentum continues.

5.0 Events Organized

1. A professional development course (PDC) on "Insider Threats and Security Culture" during 2015, in collaboration with Kings College London (KCL), UK. Second part in August 2015.

2. PDC on "Human factor in Nuclear security," in 2016 in collaboration with KCL, UK.
3. Advanced-level workshop on "Nuclear Security Curriculum Review: Lessons Learned, Current Challenges and Best Practices" in collaboration with Texas Engineering Experiment Station (TEES) at Texas A&M University (TAMU), US in 2017.
4. "An advanced-level workshop on "Vulnerability Assessment of Nuclear Security System Design" was organized in 2018 in collaboration with TEES, and ORNL, financially supported by DTRA, US.
5. A training program for "Scientists, Technicians and Engineers on Nuclear Security" in collaboration with World Institute of Nuclear Security (WINS) Academy, Vienna, Austria in 2018.
6. A workshop on "Nuclear Security Design Vulnerability Assessments & The Battle Board Table-top Exercise" during 2019 in collaboration with TEES, and ORNL, financially supported by DTRA, US.
7. An advanced-level training program in collaboration with WINS Academy and ORNL, USA on "Integrated Nuclear Safety and Security Culture" in 2019.
8. DST-SERB School on Role of Symmetries in Nuclear Physics" October 10 to 23, 2019 at Amity University, Noida, Uttar Pradesh
9. Virtual workshop on "HRP in Nuclear Complexes" by Ms. Karen Kaldenbach, Threat Reduction Initiative, ORNL, US, 28th April 2020
10. Virtual workshop on "Human Factors, Trustworthiness and reliability in Nuclear Complexes" by Ms. Karen Kaldenbach, Threat Reduction Initiative, ORNL, US, 27th April 2020.
11. Virtual WINS Academy Training on Integrating Cyber Security with the Security Programme, 22nd -26th September 2020, in collaboration with Oakridge National Laboratory, US and IAEA.
12. Workshop on Women in Nuclear Security Initiative (WINSI) in collaboration with IAEA, Vienna, Austria, 7th March 2022.
13. Online Training course for Scientists, Technicians and Engineers (STE) on Nuclear Security, 23rd – 25th May 2022, in collaboration with WINS, Vienna, Austria.
14. Advanced Workshop on "The Applications of Nuclear Security: Detection Equipment and Methodologies", 19th – 22nd June 2023 in collaboration with TEES, TAMU and ORNL, financially supported by DTRA, US.
15. Workshop on "The Practical Applications of Nuclear Security, 27th -29th March 2023.
16. Advanced Workshop on "The Applications of Nuclear Security: Detection Equipment and Methodologies", 19th - 22nd June 2023, in collaboration with TAMU, and ORNL, financially supported by DTRA, US.

6.0 Final Remarks

An important outcome of all the above-mentioned programs is the role of AINST in spreading the word of nuclear safety and security. We are the only institution floating courses to university students on nuclear security and security culture, apart from reactor safety and reliability. We have been organizing activities for school and university students to spread the word about nuclear safety and security [9].

Owing to the global exposures provided our alumni are accepted and in demand in the global community.

Acknowledgement

We extend sincere thanks and gratitude to both national and international agencies in setting up and sustaining this unique program. We also extend our full gratitude to the founding and sustaining members of the Institute. we thank the president SRESA for helping us promote our vision and mission amongst the learned audience.

References:

[1] https://www.energy.gov/nnsa/123-agreements-peaceful-cooperation

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[3] https://www.iaea.org/about/history/atoms-for-peace-speech

[4]http://ainst.amity.edu/?page_id=159

[5] http://ainst.amity.edu/?page_id=175

[6] https://nsspi.tamu.edu/remotely-accessible-radiation-detection-laboratory-for-distance-education-32845/

[7] Datta, Arpita and Goel, Dr. Alpana (2020) "Promoting Nuclear Security Education and Training Activities at Amity University, India," *International Journal of Nuclear Security*: Vol. 6: No. 2, Article 6. https://doi.org/10.7290/ijns060206

[8] https://www.iaea.org/services/networks/insen

[9] https://resources.inmm.org/annual-meeting-proceedings/strengthening-nuclear-security-culture-training-university

About the authors:

Dr. Alpana Goel *is Director & Head Chair, INSEN, IAEA, Indian Academy Ambassador, WINS, Member of the Leadership Academy, IAEA. She is a M.Sc. and Ph.D. (Nuclear Physics) from IIT, Roorkee.*
Formerly Head of department of Physics, Amity Institute of Applied Sciences since 2003. More than 30 years teaching experience of teaching UG and PG students. Worked as Post doc in Delhi University. Her Research Interests include Nuclear Structure Physics. She was involved in developing theoretical information about Super deformed Nuclei. She has Published more than 40 papers in very reputed National and International Journals. Some of papers are in Physical Review C, Physics Letters, Nuclear Physics A, Pramana. She has also authored four books for B. Tech students. She has coauthored a book on Nuclear Isomer: A primer Published by Springer. Presently guiding students for Ph.D. in Nuclear Physics and nuclear security. She has completed and ongoing research projects from national and international agencies.

Er. Archana Yadav. *is Assistant Professor and Faculty Advisor -INMM Amity Student Chapter. She has M. Tech. from NST University of Delhi, Master Nuclear Energy (Operations) Ecole Centrale Paris.*

Formerly she was Senior Engineer Nuclear Science, P M Dimensions Pvt. Ltd. Gandhinagar, Gujarat. Her ***Research Interests include*** *Nuclear Physics, Nuclear Operations, Reactor Safety and Reliability, and nuclear security. Currently she is pursuing her Ph. D in area of Human reliability apart from working in projects from National and international agencies at Amity University. She has published many papers in reputed Journals. She has presented papers in INMM. She has also guided for their projects and dissertation.*

Brochure

5th Int. Conference on Reliability, Safety and Hazard (ICRESH-2024), 21-24 February, 2024 Mumbai

(next page)

About ICRESH

Over the last few years, extensive development work, in the area of Reliability Engineering in general and Probabilistic Risk Assessment in particular, has been performed as part of risk-informed applications. However, there is a need to take the level of knowledge to risk-based applications in support of asset management for complex systems like nuclear plants, space, aviation systems and process industries. The objective of this conference is to provide a forum for technical discussions on recent developments in the area of advances in risk and reliability modelling and assessment. The conference invites research and technical papers of high quality, bringing out the original contributions, for publication in the conference proceedings. As usual, it is proposed to publish a book containing the papers to be presented in the conference.

Bhabha Atomic Research Centre, Mumbai, along with the Society for Reliability & Safety are jointly organizing the Fifth International Conference on Reliability Safety and Hazard (ICRESH-2024) during 21-24 February 2024, at DAE Convention Centre, Mumbai. The earlier two conferences (ICRESH-2005 & 2010) were also held in Mumbai; the third conference was held at Lulea Technological University, Lulea, Sweden in year 2015 and in 2019 the fourth conference was held at IIT Madras, Chennai. These conferences were attended by Indian experts from many reputed labs and universities, around 20 delegates from several countries like USA, UK, Germany, Russia, Netherlands, South Korea, etc. also participated. Overall, about 130 papers, 30 invited talks and key note addresses marked the proceedings of the conference. One of the key parameters of the conference is that the book of conference proceedings was provided to participants in advance. In year 2010 it was jointly published with IEEE Reliability Society. Some of the selected papers are published in the International journal of Life Cycle Reliability Engineering, a reputed journal of SRESA and Springer.

ICRESH-2005, Mumbai

Conference Topics

ICRESH-2010, Mumbai

Reliability Prediction, Risk Based Design, Software reliability, PoF Models, Passive System Reliability, Investigation of Safety Critical Issues, Probabilistic Safety Assessment, Dynamic PRA, Risk-Informed Approach, Dynamic Models for Reliability Analysis, Stress Analysis in Support of Failure Prediction, Reliability Based Design and Evaluation, Reliability Centred Maintenance, Prognostics & Health Management, Precursor Event Analysis, Severe Accident Management, Heat Transfer and Thermal Management in Electronic System, Accelerated Life Testing, Remaining life Prediction in Support of Ageing Management, Fuzzy Reliability, Uncertainty & Sensitivity Modelling, Human Reliability Modelling, Human Factor Assessment, Failure Analysis Role of Advanced Methods in Human Factors, Artificial Intelligence Methods & Operational Reliability, Risk-informed Asset Management, Risk-based Applications, Risk-based Management Systems, Hazard Evaluation Methods, Hazard & Operability Study (HAZOPS).

Application Areas

Broad areas of the conference include but not limited to - Nuclear Power Plants & Research Reactors, Oil & gas, Chemical and Refineries, Railways, Space & Aviation Infrastructural, Software Systems, Health Care Systems, Transport and Monitoring Systems, Nuclear Facilities, structural Systems, Electronics & Communication Systems.

ICRESH-2015, Sweden

Authors interested in presenting papers based on original work of theoretical/ applied nature or case studies, are invited to submit an abstract not exceeding 400 words latest by **June 15, 2023**. The abstract should include key words / phrases and full e-mail address of the authors. Acceptance of the abstract will be notified by June 30, 2023. Soft copies of abstract and paper in MS word may be mailed to the Chairman, Technical Committee at e-mail address: icresh24@gmail.com The length of the paper should not exceed 6 pages. For detailed instructions regarding preparation of manuscript please visit conference web-site.

Conference Proceedings

Upon receiving notification about the acceptance of the abstracts, authors must submit complete manuscript of the full paper, by **September 15, 2023.** The conference proceedings will be published by a reputed publisher containing contributory papers. If possible full invited and key note talks will be included in the soft copy of conference proceedings. The soft copies of the conference proceedings will be made available to all contributors during the conference. In order to enable the technical committee to bring out the book of proceedings in time, it is essential that the complete manuscript of full-length papers is submitted by the due date positively. Papers received after this date may not be considered for print publication.

ICRESH-2019, IIT Madras

Exhibition / Sponsorship

The conference will provide an opportunity to our commercial and industrial partners to showcase their products and services to support conference activities through sponsorships. Further details may be obtained from the Convenor / Secretary ICRESH-2024 or from the conference web-site.

Conference Deadlines

Abstract submission	**: June 15, 2023**
Abstract acceptance	**: June 30, 2023**
Full paper submission	**: Sep 15, 2023**
Acceptance intimation	**: Oct 10, 2023**
Final submission of paper	**: Oct 31, 2023**
Registration deadline	**: Dec 31, 2023**
ICRESH-2024	**: Feb 21-24, 2024**

About the Venue

The conference will be held at the DAE Convention Centre, Anushaktinagar, Mumbai. Mumbai is said to be the financial / business capital of India. The convention centre is located about 20 km from Mumbai International Airport and can be easily accessed by road. It is also easily accessible by road from the Railway stations (CSTM 19 km and Mumbai Central 22 km). The city of Mumbai has all types of hotel accommodation from budget hotels to five-star hotels.

DAE Convention Centre, Mumbai

The Conference will be held from Feb 22-24, 2024. A Pre-Conference Tutorial are arranged on Feb 21, 2024

Conference Chairman, ICRESH-2024

Prof. P. V. Varde, DAE-Raja Ramanna Fellow
Sr. Professor, HBNI & Former AD, Reactor Group,
Bhabha Atomic Research Centre, Mumbai

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5th International Conference on Reliability, Safety and Hazard – 2024

(Advances in Risk & Reliability Modelling and Assessment)

February 21-24, 2024
Venue: DAE Convention Centre, Anushaktinagar, Mumbai, India

Organisers

Bhabha Atomic Research Centre, Mumbai
Society for Reliability and Safety, Mumbai

For further updates including registration details please visit conference website: https://www.sresa.org.in/ICRESH-2024.

Society for Reliability & Safety (SRESA)

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MEMBERSHIP APPLICATION FORM. **MEMBERSHIP NO*.**

1.	Name of applicant		Photograph (Affix passport size photograph above and send one additional softcopy with email)
2.	Qualification		
3.	Affiliation		
4.	Position held		
5.	Specialization		
6.	Official address ☐	Residential Address ☐	
	(Please tick the address to be used for official communication)		
7.	Cell phone number(s)		
8.	Email		
9.	Date of birth (DD/MM/YY)		
10.	Type of membership (Tick applicable category)	Life membership: Rs. 2,200/- Corporate membership: Rs 50,000/- Annual student membership: Rs 500/- (Please tick the applicable category)	☐ ☐ ☐
11.	Payment mode: i) Cheque ☐ ii) Demand draft ☐ iii) On-line transfer: ☐ Cheque /DD/online transfer details :……..Date: ……. Amount: …… Name of the Bank:……Account number……ISFC code		
12	Applicant's Signature:		

- Kindly send the scanned copy of the form duly signed by email: Secretary, SRESA along wit a soft copy of the passport size photograph at secretary@sresa.org.in
- SRESA account details are as follow: Money to be transferred in favour of 'Society for Reliability and Safety', Bank Name: State Bank of India, Anushaktinagar, Mumbai, 400094; Account number: 31110442604, Swift Code SBIN0010124, Branch: BARC, Mumbai-400085.
- *Will be allotted by SRESA Office.