

**6th International Conference on Entrepreneurship, Innovation and Leadership
(ICEIL – 2024)
9th - 11th October 2024**

SESSION WRITEUP

TRACK-4: Science & Technology

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| Session No | 4.1 |
| Panel Discussion Session Topic | Powering Viksit Bharat through innovation and entrepreneurship in Electronic Material |
| Day & Date | Wednesday, 9th October 2024 |
| Time | 12 noon – 1:30 pm |
| Venue | F-2 Seminar Hall |
| Organizing Institute | Department of Physics - Amity Institute of Applied Sciences |

Session Overview:

India's journey towards becoming a developed nation, "Viksit Bharat," by 2047 can be significantly accelerated by fostering innovation and entrepreneurship in the field of electronic materials. Electronic materials are fundamental to industries like semiconductors, renewable energy, telecommunications, and next-generation computing, all of which are crucial to India's economic growth and technological advancement.

Encouraging research and development (R&D) in electronic materials can lead to breakthroughs in areas such as flexible electronics, nanotechnology, and sustainable energy solutions. Startups and entrepreneurs can leverage these innovations to create new products and solutions that not only boost India's technological capabilities but also address critical challenges in sectors like healthcare, education, and energy.

Furthermore, a robust ecosystem that supports the commercialization of electronic material innovations can create jobs, reduce dependency on imports, and position India as a global leader in electronics manufacturing. By promoting collaboration between academia, industry, and government, India can empower entrepreneurs to drive the development of indigenous technologies, creating a self-reliant and technologically advanced Viksit Bharat.

Session Objectives:

1. The panel aims to explore the pivotal role of innovation and entrepreneurship in the electronic material sector, which is essential for driving India's vision of a "Viksit Bharat".
2. Discussion will focus on how India can position itself as a leader in electronic materials and semiconductor production to meet both domestic and global demands.
3. Examine India's current strengths and areas for growth in the semiconductor materials industry.
4. Industry-Academia Collaboration: Importance of collaboration between Amity University and industry for innovation and practical application in the electronic material research.

Key Questions to be Explored:

1. How can partnerships between academic institutions and industry be strengthened to drive innovation and commercialization in electronic material?
2. How can electronic material be leveraged to enhance India's capabilities in strategic sectors like defense, space, and telecommunications?
3. What are the biggest challenges facing the Electronic Material industry in India, and what opportunities exist for overcoming them to achieve the vision of a "Viksit Bharat"?
4. What are the key factors that will allow India to compete with global leaders in the electronic material industry? How can India position itself as a major player in this field?
5. How can India encourage more innovation and R&D in the field of electronic material to meet global standards and market demands?
6. What role should government policies play in fostering the growth of the semiconductor material industry in India? How can policy frameworks be improved?

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| Session No | 4.2 |
| Panel Discussion Session Topic | Synergism in chemical industries: an innovative step towards circular economy |
| Day & Date | Wednesday, 9th October 2024 |
| Time | 2:00 noon – 3:30 pm |
| Venue | F-2 Seminar Hall |
| Organizing Institute | Department of Chemistry - Amity Institute of Applied Sciences |

Session Overview:

Synergism in chemical industries exhibits potential to accelerate their growth and achieve more than they would individually. Synergism in the chemical industry can include collaboration and integration of different processes, technologies, and expertise to achieve greater efficiency, sustainability, and innovation. This approach can lead to the development of new products, processes, and business models that support a circular economy. Interestingly, the impact of synergism between chemical industries can make contribution in reducing the impact associated with utilization of petrochemical feedstock on the

environment. To enhance the circular economy and bring synergism in chemical industries, one approach can be fulfilling the needs of each other and accomplishing the targets with less raw materials. Synergism may involve connection between industries for resources, which will reduce the consumption of raw materials. To elaborate, industries can collaborate in providing their side-products, to other industries, which can employ these materials as their starting synthons. This synergism will compensate the costs paid by industries to import complex structures of raw materials. Taking into consideration the aspects of synergism, it can be assumed that embracing synergism, the chemical industries can accelerate its transition towards a circular economy, driving innovation, and reducing its environmental footprint.

Session Objectives:

1. To understand the concept of synergism in the chemical industries.
2. To understand the cross-industry collaboration.
3. To learn the positive impact of synergism on economic, and environmental aspects.
4. To realize the innovative methodologies adopted by the chemical industries to promote closed-loop production.

Key Questions to be Explored:

1. Possible innovative ways for synergism in the chemical industries.
2. Feasibility of synergism of chemical industries with industry of any other sector.
3. Influence of synergism in the individual growth as well as combined growth of industries.
4. Possibility of synergism in chemical industries benefiting the environment.
5. Impact of synergism in chemical industries in the cost of the product development

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| Session No | 4.3 |
| Panel Discussion Session Topic | Harnessing Mathematical Modelling and Tools to Strengthen the Deep Tech Startups Towards Make In India. |
| Day & Date | Wednesday, 9th October 2024 |
| Time | 3:45 – 5:15 pm |
| Venue | F-2 Seminar Hall |
| Organizing Institute | Department of Maths & Stats - Amity Institute of Applied Sciences |

Session Overview:

A panel discussion on "Harnessing Mathematical Modelling and Tools to Strengthen the Deep Tech Startups Towards Make In India" would focus on how advanced mathematical techniques can drive innovation and growth in India's deep tech startup ecosystem. The panel would explore how mathematical modeling, data analytics, artificial intelligence, and computational tools can solve complex problems in industries such as healthcare, manufacturing, space technology, and defense, aligning with the Make in India initiative.

Key areas of discussion could include the use of algorithms, simulations, and optimization techniques to enhance product design, improve operational efficiency, and reduce costs. Panellists might discuss how startups can leverage these tools to innovate faster, create cutting-edge solutions, and compete globally. The role of academia, research institutions, and government policy in fostering a supportive environment for deep tech innovation would also be highlighted.

Strong mathematical models are essential for business analytics. Deep tech startups exploit these models for business insights. The panel would likely emphasize the importance of collaboration between startups, industry experts, and policymakers in building a robust ecosystem. Challenges such as funding, talent acquisition, and scaling up deep tech innovations might also be addressed. Ultimately, the discussion would focus on how deep tech startups can contribute to India's self-reliance, technological advancement, and economic growth through the application of mathematical tools.

Session Objectives:

1. **Explore the role of mathematical modeling and advanced computational tools** in driving innovation and efficiency in deep tech startups, particularly in sectors like healthcare, manufacturing and defense applications.
2. **Discuss integrating deep tech solutions with the Make in India initiative**, focusing on how startups can leverage these tools to create competitive, cost-effective, and scalable products.
3. **Identify key challenges and opportunities** for deep tech startups in India, including funding, talent acquisition, and policy support, while emphasizing the role of government and academia in fostering innovation.
4. **Highlight successful case studies and collaborations** where mathematical modeling has led to breakthroughs and provide actionable insights on how startups can implement these tools for growth and global competitiveness.

Key Questions to be Explored

1. How can deep tech startups effectively utilize mathematical modeling and AI-driven tools to accelerate innovation and enhance product development?
2. What specific challenges do Indian deep tech startups face in adopting advanced mathematical tools, and what solutions can address these challenges?
3. How can mathematical modeling contribute to the success of the Make in India initiative, particularly in promoting technological self-reliance and global competitiveness?
4. What role should government policies, academic institutions, and industry collaborations play in supporting the growth of deep tech startups through mathematical tools?
5. What are the key success stories of Indian startups leveraging mathematical modeling, and what lessons can be learned from their experiences?

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| Session No | 4.4 |
| Panel Discussion Session Topic | Innovative Technological Solutions Based Startups for Nutritional Food System for a Self-reliant Nation |
| Day & Date | Thursday, 10th October 2024 |
| Time | 10:00 am – 11:30 am |
| Venue | F-2 Seminar Hall |
| Organizing Institute | Amity Institute of Food Technology |

Session Overview:

Creating a technological solution-based startup focused on a nutritional food system for a self-reliant nation requires innovation, scalability, and a deep understanding of both technology and local food systems. It requires development of a sustainable, technology-driven food ecosystem that promotes self-reliance by optimizing food production, processing, distribution, and waste management using cutting-edge technologies. To build a resilient and efficient food system that supports local farmers, reduces food waste, ensures food security, and minimizes environmental impacts, a sustainable food system startup should concentrate on several key areas that integrate technology, sustainability, and local solutions. The emerging energy-efficient processing techniques are: cold plasma, High-Pressure Processing (HPP), or solar-powered processing units. These can reduce both the energy footprint and spoilage.

A tech-Driven Platform is an integrated platform that brings together different stakeholders in the food system—farmers, processors, distributors, and consumers. The platform can be: Mobile-First: Accessible to small-scale farmers via mobile devices, providing weather updates, market prices, and crop management advice. AI-Enabled: Use AI and machine learning to predict supply chain needs, optimize resource allocation, and reduce inefficiencies in production and distribution. Blockchain-Powered: Implement blockchain to track food origins, improve transparency, and enhance trust in local, sustainable food systems. There should be Government Collaborations working closely with government agencies for subsidies, grants, or regulatory support, especially in aligning with national goals of self-reliance. Local Farmer Cooperatives: Engage with farmer cooperatives to introduce new technologies at scale, offering training and equipment at subsidized costs. Academic & Research Institutions: Partner with universities or research centres to continually innovate on sustainable agriculture practices and food processing technologies.

Session Objectives:

1. To identify the gaps between food industry, food processing and technology that can hinder innovation and sustainability
2. To gain insight in the solution approaches focusing on innovation, collaboration and strategic investments
3. To discuss the effective marketing strategies for Startups in food sector.
4. To identify food adulterations effectively by low-cost devices and startup using such devices.

Key Questions to be Explored:

1. What are the gaps between food industry, food processing and technology that can hinder innovation and sustainability?
2. How these gaps can be bridged?
3. What problems did you encounter while establishing the Startups?
4. What marketing strategies can be utilized to capture the market?
5. How the nutrition in the food can be preserved using innovations in technology?

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| Session No | 4.5 |
| Panel Discussion Session Topic | Innovations and Entrepreneurship in Future Technologies for Viksit Bharat @2047: Nanotechnology, Semiconductor Technology and Quantum Technology |
| Day & Date | Thursday, 10th October 2024 |
| Time | 12:00 noon – 1:30 pm |
| Venue | F-2 Seminar Hall |
| Organizing Institute | Amity Institute of Nanotechnology |

Session Overview:

The future of India, known as Viksit Bharat@2047, lies in the advancements of Nanotechnology, Semiconductor Technology, and Quantum Technology. These technologies will pave the way for the younger generation to emerge as global leaders and fulfill the vision of Viksit Bharat@2047. This conference aims to provide a distinctive platform for the presentation, discussion, and exchange of innovative research ideas in the emerging fields of Nanotechnology, Semiconductor, and Quantum Technology for Viksit Bharat @ 2047. The significance of these technologies in today's world cannot be overstated due to their wide-ranging applications and transformative impact on various aspects of modern life. Renowned experts in these fields will be sharing their knowledge and insights at this conference, fostering collaboration between industry and academia to address the demands of cutting-edge research and society. The event will offer a forum for researchers, innovators, and practitioners to discuss the advancements in next-generation tools and innovative technology solutions for business growth and sustainability, aligning with the SDG goals. Semiconductor and quantum technology are essential in shaping the modern world, driving innovation in diverse industries, and enhancing the quality of life worldwide.

Session Objectives:

1. To discuss the current scenario of and innovations in Nanotechnology, Semiconductor Technology and Quantum Technology
2. To brainstorm the challenges and scope for entrepreneurship in Nanotechnology, Semiconductor Technology and Quantum Technology
3. To discuss the progress of collaboration between industry and academia in the Nanotechnology, Semiconductor Technology and Quantum Technology

4. To identify the gaps and make a road map for synergistic approach of innovation and research in Nanotechnology, Semiconductor Technology and Quantum Technology

Key Questions to be Explored:

1. How can Nanotechnology, Quantum Technology and Semiconductor Technology contribute to Viksit Bharat @ 2047?
2. What basic skill sets are expected from the graduates/ postgraduate’s student for the upcoming semiconductor industry?
3. How can academia help to address challenges faced by industries in the field of Nanotechnology, Semiconductor Technology and Quantum Technology?
4. What are the possibilities of collaborative industrial training programs which can be conducted at Amity Institute of Nanotechnology, AUUP, to make the students/engineers industry ready?
5. What is the expectation of the govt from educational institutions like Amity University to fulfil Viksit Bharat dream?
6. With GoI focused on mission mode especially Quantum Technologies, Semiconductor Technology and now Advanced nanomaterials, how the academia and industries can join hands together for national mission?
7. Open Questions from Audience and Questions arises from Speaker’s speeches.

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| Session No | 4.6 |
| Panel Discussion Session Topic | Entrepreneurial Insights and Innovation: Shaping the future of Forensic Science |
| Day & Date | Thursday, 10th October 2024 |
| Time | 2:00 pm – 3:30 pm |
| Venue | F-2 Seminar Hall |
| Organizing Institute | Amity Institute of Forensic Science |

Session Overview:

The panel discussion, titled "**Entrepreneurial Insights and Innovation Shaping the Future of Forensic Science**," will examine the evolving intersection of entrepreneurship, innovation, and forensic science. With forensic science playing an increasingly critical role in criminal investigations, advancements in technology, data analysis, and methodologies are revolutionizing the field. Key developments include next-generation DNA sequencing which allows for more precise genetic profiling and analysis using AI, advanced chemical forensics improved detection of trace materials and digital forensics, which enable data retrieval and analysis from smartphones, cloud storage, and encrypted devices.

The rise of deepfakes presents new challenges in verifying the authenticity of media. As AI becomes more sophisticated in generating text, images, and video, distinguishing AI-generated content from human-created material has grown more difficult. Tools like GPT-4 produce highly convincing outputs with few detectable flaws.

In forensic science, AI is enhancing both speed and accuracy, analyzing vast amounts of forensic data, including DNA profiles, fingerprints, and digital traces, more efficiently than humans. AI models now detect manipulated content by analyzing digital artifacts like pixel inconsistencies and unnatural facial movements. Blockchain technology is also being explored to establish immutable records, enhancing media authentication. AI also aids in detecting cybercrime patterns, reconstructing deleted files, and recognizing anomalies.

This panel will bring together experts from entrepreneurship, forensic science, and technology to discuss how innovations in AI, data analytics, and biometrics are reshaping the future of forensics, and explore the challenges and opportunities these changes present.

Session Objectives:

1. To explore how entrepreneurial ventures are transforming forensic science practices.
2. To highlight key innovations in driving efficiency and accuracy in forensic investigations.
3. To discuss the challenges and opportunities faced by entrepreneurs in the forensic science domain.
4. To identify future trends in forensic science and the role of emerging technologies.

Key Questions to be Explored:

1. What role does entrepreneurship play in advancing forensic science technologies?
2. How are innovations like AI, blockchain, and biometrics shaping forensic practices?
3. What are the challenges faced by startups and innovators in the forensic science industry?
4. How can collaboration between forensic experts and entrepreneurs lead to more effective solutions?
5. What are the ethical considerations of integrating advanced technologies into forensic science?
6. How can emerging technologies ensure greater accuracy and reliability in forensic evidence analysis?
7. How can forensics be augmented with emerging technologies to detect deepfake videos?

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| Session No | 4.7 |
| Panel Discussion Session Topic | Innovations and Advancements in Societal Applications of Radiation Technologies for Self-Reliant India. |
| Day & Date | Thursday, 10th October 2024 |
| Time | 3:45 pm – 5:15 pm |
| Venue | F-2 Seminar Hall |
| Organizing Institute | Amity Institute of Nuclear Science & Technology |

Session Overview:

Radiation Technology is extensively used to benefit mankind. Nuclear energy is referred to as a clean energy technology as it *produces nearly zero carbon dioxide* or other greenhouse gas

emissions. Radioisotopes are used in medicine, academics, and industry, as well as for generating electricity. In addition, radiation has useful applications in areas such as agriculture, archaeology (carbon dating), space exploration, law enforcement, geology (including mining), and many others. Opening up of the highly restrictive nuclear sector to private companies to set up small nuclear reactors and carry out research on small, as well as modular nuclear reactors was announced during the presentation of Union Budget 2024. The development of advanced detectors and technologies has revolutionized applications of radiation in health care in the form of PET-CT and SPECT-CT. With the continuous advancement in Nuclear Technology, *India* is marching steadily towards self-reliance in application of radioisotopes in important fields like in carbon free electricity generation, nuclear medicine, industry, and agriculture. In the panel discussion speakers will be covering applications of radiation technology in various fields. Thus nuclear technology has potential for new avenues in entrepreneurship development. The innovation in nuclear technology can be leveraged for significant contribution to Viksit Bharat @ 2047.

Session Objectives:

1. To discuss the applications of nuclear technology in various fields such as healthcare, power sector etc.
2. To provide a comprehensive review of significant developments in applications of radiation science and technology,
3. To discuss the scenario of establishing small modular and microreactors in India to spur industry participation.
4. To explore the career and Internship opportunities for nuclear Science and Technology students

Key Questions to be explored:

1. What are the latest advancements in radiation technology/therapy?
2. Is India on the path of self-reliance in developing and producing radiopharmaceuticals?
3. What are the advantages of small modular and microreactors?
4. Is nuclear technology a solution to prevent global warming?
5. How much energy can a small modular reactor produce?
6. Is nuclear energy sufficient from SMR to fulfil the need for electricity consumption in India in a sustainable way?
7. What is the mission of self-reliant India in the field of radiation technology?
8. How difficult /easy is it to get into an entrepreneurial venture/develop an innovative product/new technology/solution in the field of nuclear technology in India?
9. How do you expect the industry to emerge in this decade?