Grand Inception & Strategy Summit of QMD Foundation

"Strategizing for Impact, Incepting for Change."

Prof. Rangan Banerjee, Director, IIT, New Delhi addressing the participants at the inaugural session of the grand inception & strategy summit of QMD Foundation held at IRD conference Hall on March 20, 2025 held at IIT Delhi.

The Quantum Materials & Devices (QMD) Foundation at IIT Delhi successfully hosted its Grand Inception & Strategy Summit, bringing together technology groups, leading experts, and policymakers to align objectives and strategies for advancing quantum technologies in the materials and devices domain in India.

Prof. Rajendra Singh, Director, QMD Foundation, in his welcome address highlighted the importance of product development and the need for advancing quantum technologies in India. He also emphasized that the Quantum Mission presents a crucial opportunity to make breakthroughs in science and technology. "We can achieve its objectives by making a united effort to develop new materials and devices. Following timelines and working rigorously while taking responsibility for achieving our targets will be key to success," he stated.

In his keynote address, Prof. Rangan Banerjee, Director, IIT Delhi, underscored the significance of collaboration and teamwork in achieving the goals of the Quantum Mission. He remarked, "Success is best achieved when we work together, leveraging each other's strengths and supporting one another. The development of the Quantum Mission truly relies on team effort, and its objectives can only be met if every group works tirelessly and efficiently towards their goals. By fostering an environment of efficiency and innovation, we can collectively overcome challenges and drive progress." He assured the Hub team that IIT Delhi will support activities which are required to support this mission.

Dr. J. B. V. Reddy, Head of the Quantum Technology Cell at Department of Science and Technology India, emphasized the importance of market-level quantum technology development and urged Technology Groups (TGs) to devise self-sustaining models for India. He called for optimal utilization of existing equipment and facilities within the country and highlighted the need for well-defined timelines to achieve mission goals.

The summit facilitated the exchange of critical insights, fostering new perspectives on overcoming technical barriers and accelerating innovation. During discussion session, experts and participants from various TGs engaged in-depth discussions on quantum materials, device fabrication, and scalable quantum technologies.

Prof. Vikram Kumar, ex-Director of SSPL, DRDO, and Honorary Professor at IIT Delhi, addressed the challenges faced in quantum research and stressed the need for advanced research facilities. "We need to make breakthroughs, explore new phenomena, and occasionally take the road less travelled to achieve success in the Quantum Mission," he said.

Adding an insight into the development of quantum technologies, Prof. Samit K. Ray from IIT Kharagpur highlighted that India is currently experiencing the second quantum revolution and emphasized the necessity for high-quality quantum materials across all hubs. He advocated for the rapid fabrication of devices and efficient resource management to accelerate advancements in the field.

The event featured interactive sessions with key leaders and presentations from Technology Groups, outlining objectives and research strategies. Various TGs of QMD T-Hub shared their specialized focus areas. TG1 at IIT Delhi is dedicated to developing On-Demand Single Photon Emitters, Single Photon Avalanche Detectors, High-

Frequency Devices, and InP-Based Epitaxial Semiconductors, TG2 at IIT Bombay focuses on wafer-scale emitter and detector arrays for multi-wavelength room-temperature photonic quantum technologies and TG3 is working on reconfigurable and scalable photonic qubit architecture for quantum computing through heterogeneous and monolithic approaches.

An engaging discussion between Dr. J. B. V. Reddy, Prof. Rajendra Singh, and members of the Technology Hub (T-Hub) further refined strategies for research collaboration, resource optimization, and division of activities.

The summit concluded on a strong note of collaboration, reaffirming a unified vision to propel quantum technology advancements in India. This milestone event marks a significant step towards strengthening India's leadership in quantum research and innovation.