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2025: International Year of Quantum Science & Technology

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Quantum Science and Technology are transforming the world, with India's Raman Research Institute's QuIC Lab leading the way in groundbreaking advancements. We are honored to feature **Dr. Zahid Husain Khan,** *a renowned Laser and Photonics expert and UNESCO expert. In this first installment, Dr. Khan shares insights on UNESCO's plans for year-long celebrations dedicated to this transformative field.*

Imagine a world where we can communicate securely across vast distances instantaneously, where diseases can be diagnosed and treated at the molecular level, and where we can solve problems so complex that they would take today's computers millennia to crack. This is not the stuff of science fiction; it is the promise of quantum science—a realm of endless possibilities where the very fabric of reality can be bent and shaped by our understanding of the tiniest particles and the most fundamental forces. As we stand on the brink of a new era, the United Nations has declared 2025 as the International Year of Quantum Science and Technology, inviting the world to embark on a year-long exploration of this fascinating field that holds the key to our future.

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On June 7, 2024, the United Nations made a landmark decision, declaring 2025 as the International Year of Quantum Science and Technology. This year-long initiative is poised to elevate global awareness and appreciation for the marvels of quantum science and its transformative applications, marking a hundred years since the birth of quantum mechanics. This declaration is a celebration of a

century of scientific breakthroughs, a tribute to the power of human curiosity, and a recognition of the immense potential quantum science holds to reshape our understanding of the universe.

The journey to this historic proclamation was a collaborative effort, propelled by the passion and advocacy of numerous scientific societies and international organizations. Mexico led the charge, and the proposal found robust support from UNESCO's Executive Board in May 2023, with the UNESCO General Conference echoing this endorsement later in November. By May 2024, Ghana took the mantle, presenting a formal draft resolution to the U.N. General Assembly. Co-sponsored by six nations, the resolution garnered overwhelming support, culminating in its approval on June 7, 2024.

This achievement owes much to the tireless work of visionaries such as Professor John Dudley from the Université de Franche-Comté, France, and Professor Joseph Niemela from the Abdus Salam International Centre for Theoretical Physics, Italy. Their efforts in preparing and presenting the proposal across various UNESCO committees were instrumental, demonstrating a commitment to bringing the wonders of quantum science to the forefront of global consciousness.

The U.N. declaration is not just a symbolic gesture; it is a clarion call to action. It invites individuals, groups, schools, institutions, and governments around the world to embrace this momentous opportunity to highlight the significance of quantum science and technology. The International Year of Quantum Science and Technology Steering Committee is already orchestrating a series of global initiatives and events, designed to captivate and educate a diverse audience, particularly those who may not yet be acquainted with the nuances of quantum science. As 2025 approaches, the dedicated IYQ website will be a treasure trove of information, featuring a plethora of events, resources, and activities designed to ignite the imagination and curiosity of all who wish to delve into the enigmatic world of quantum science.

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Quantum science is not just a field of study; it is a beacon of hope and innovation, a key to unlocking solutions to some of the world's most pressing challenges. From tackling climate change and enhancing energy efficiency to improving food security and ensuring access to clean water, quantum science stands at the forefront of the quest for sustainable development. The International Year of Quantum Science and Technology will not only amplify awareness of these critical issues but also inspire the next generation of quantum pioneers. These young minds will be the torchbearers, driving the innovations that will make a tangible, positive impact on society, pushing the boundaries of what is possible.

The International Year offers an unparalleled opportunity for people of all ages and backgrounds to explore how quantum science influences every facet of our existence—from technology and public policy to economic growth and cultural evolution. In the months leading up to 2025, individuals, organizations, and governments are encouraged to organize events, develop educational materials, and engage in activities that will deepen the public's understanding of quantum science and its limitless potential.

Quantum science and technology are poised to revolutionize our world in ways that are scarcely imaginable. From the promise of quantum computing, which could solve problems that are currently unsolvable, to the secure communications made possible by quantum entanglement, the future is brimming with possibilities. As research and development continue to accelerate, we can expect a cascade of groundbreaking innovations that will reshape industries, enhance our quality of life, and redefine the very fabric of reality. The United Nations' declaration of 2025 as the International Year of Quantum Science and Technology is more than a celebration; it is an invitation to all humanity to join in a global dialogue, to connect across borders, and to recognize the profound importance of quantum science in shaping the future of our planet. This initiative will unite nations, organizations, and individuals in a collective effort to explore the wonders of quantum science, paving the way for a brighter, more enlightened, and technologically advanced future. ◆

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