

NITI Aayog's Frontier Tech Hub releases 4th edition of its Quarterly Insights Future Front on "Introduction to 2D Materials", in partnership with Indian Institute of Science

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As the world is entering a **materials revolution** that could redefine the future of industries from semiconductors to quantum technologies. NITI Aayog's Frontier Tech Hub today released the fourth edition of its flagship *Future Front Quarterly Insights* series, titled "**Introduction to 2D Materials**", developed in collaboration with the Indian Institute of Science (IISc), Bengaluru, to drive awareness about the importance of 2D materials and why India must care.

These 2D materials are roughly 1/80,000 the width of a human hair, or 800,000 times smaller than the tip of a pencil, despite this thinness, they are 200 times stronger than steel and conduct electricity more efficiently than copper. This is the world of two-dimensional (2D) materials, a frontier that promises to reshape the future of semiconductors, energy, electronics, and quantum computing.

The Future Front insight underscores the urgency of **resilient innovation ecosystems, self-reliance in critical material access, and strategic international partnerships**.

It stresses that for the economies investing early, the payoff goes beyond product exports to include energy savings, IP ownership, and strategic independence as silicon scaling approaches its physical limit. Conversely, the cost of inaction is not just economic but strategic.

The 4th edition of Quarterly Insights can be accessed at: <https://niti.gov.in/sites/default/files/2025-09/FTH-Quarterly-Insight-Sep-2025.pdf>

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