India’s First Quantum Diamond Microchip Imager

Source: TH

IIT-Bombay and **Tata Consultancy Services (TCS)** have collaborated to pioneer India's inaugural **Quantum Diamond Microchip Imager,** in line with the **National Quantum Mission's** objective to position India as a prominent global leader in **quantum technology.**

- The objective is to develop **an advanced sensing tool to enhance precision in semiconductor chip examination**, reduce chip failures, and improve energy efficiency.
- The Quantum Diamond Microchip Imager, similar to **magnetic resonance imaging (MRI),** offers **non-invasive** and **non-destructive imaging** of **semiconductor** chips, overcoming the limitations of traditional methods in **detecting anomalies as chip sizes decrease.**
- It utilises **nitrogen-vacancy centres** in **diamonds** and specialised hardware and software, significantly **enhancing failure analysis**, device development, and optimisation processes. It also visualises **three-dimensional charge** flow in multi-layer chips for **advanced defect identification.**
- It will have wide applications in microelectronics, biological and geological imaging, and fine-scale imaging of magnetic fields, among others.

Read more: National Quantum Mission