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IIT Guwahati develops security technology to combat fake pharma products

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Offenders have found ways to accurately copy conventional security measures



Researchers at the Indian Institute of Technology (IIT) Guwahati have developed an advanced light-emitting perovskite nanomaterial that could improve protection against fake currency, forged documents, and other counterfeit products. To achieve this, the research team has developed nanocrystals capable of producing light-based security patterns that cannot be replicated using traditional printing and imaging methods.

Counterfeiting has become a global concern affecting various industries, ranging from pharmaceuticals and electronics to banking and identity documentation. With the help of modern technologies, offenders have found ways to accurately copy conventional security measures such as barcodes, QR codes, holograms, and watermark labels.

The research team has developed a double-layer coating around the nanocrystals, making them heat- and chemical-resistant while maintaining their light-emitting properties.

Then, with the use of a direct laser writing technique, the team created tiny patterns from these materials. The multi-layer coating enabled the developed nanocrystals to create these patterns without using conventional lithographic masks, which helped in achieving resolutions of 10–40 micrometers, allowing very complex patterns and encoding of information.

It is notable that the laser patterning technique developed by the IIT Guwahati research team can also be utilised in developing cutting-edge micro-LED displays for smartphones, wearables, and Augmented Reality (AR) systems, among others.

On a broader scale, the developed technology can be applied across several sectors where product authentication and security are critical.