

IIT-K's stealth tech to make jets invisible to enemy radar

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New Delhi, 27 November

High-technology cooperation between indigenous defence industry and academia has begun yielding results. On Tuesday, Indian Institute of Technology Kanpur (IIT-K) announced a breakthrough in stealth technology, which would make combat systems like tanks and fighter aircraft invisible, or near-invisible to enemy radar.

Designated a “meta-material surface cloaking system” (MSCS), this has been named the Anālakṣhya by its inventors in IIT-K. It is of major interest to the Defence Research & Development Organisation (DRDO) in its development of the Advanced Medium Combat Aircraft (AMCA) — a “stealth fighter” that is being engineered to be near-invisible to the enemy’s air defence radar.

The technology has undergone extensive laboratory and field testing between 2019 and 2024, proving its efficacy across diverse conditions. The system is currently under acquisition by the Indian armed forces, signalling its strategic importance to national security.

According to a statement, 90 per cent of the Anālakṣhya MSCS is sourced indigenously. In a significant move towards industrial production,



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the technology has been licensed to a private company “Meta Tattva Systems”, which will oversee its manufacturing and deployment.

Stealth systems avoid detection by enemy radar through two devices. First, by engineering its external surface with small jagged panels that scatter radar waves, rather than large flat surfaces that reflect back radar waves to be detected by enemy radar antennae.

The second device that renders battlefield systems such as stealth fighters hard to detect is their surface composition. Flat, metallic surfaces enable

detection by reflecting radar waves. In contrast, absorptive surfaces absorb a high percentage of the synthetic aperture radar (SAR) waves.

“This textile-based, broadband, meta-material microwave absorber offers near-perfect wave absorption across a broad spectrum, significantly enhancing stealth capabilities against SAR imaging,” IIT-K said on Tuesday.

Developed by a team of IIT-K researchers, this system sets a new benchmark in multispectral stealth capabilities, offering transformative applications in defence, national security, and specialised industries.