

IIT-Indore secures 2 patents on power devices for EVs and system for anti-theft biometry

Total number of patents granted to the elite institute reaches 13 so far

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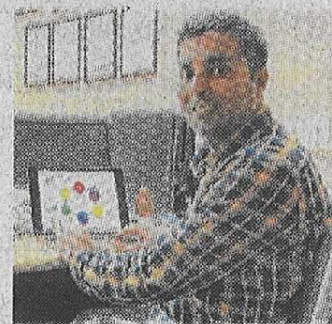
Indian Institute of Technology Indore has been granted two more patents by the Patent Office, Government of India. With this, the total number of patents secured by IIT Indore has reached 13 so far.

One patent has been awarded on "A method of fabricating high two-dimensional electron gas density yielding Zinc Oxide heterostructure".

The granted patent is currently under "Tech Marketing Phase" of the commercialisation process. The commercialisation process is handled by

the Foundation for Innovation & Technology Transfer (FIIT) of IIT Delhi. The leader of this invention is Professor Shaibal Mukherjee, and his co-inventors are Professor Abhinav Kranti, Md Arif Khan, and Rohit Singh, PhD students from the Department of Electrical Engineering of IIT Indore.

Mukherjee said, "The novel fabrication technique will revolutionise the domain of high electron mobility transistor (HEMTs) based power systems for next-generation electric vehicles, 5G/6G communication, and space technology and this invention is in line with diverse Central government's initiatives such as Make in India, NITI Aayog, Zero Emission



Prof Shaibal Mukherjee

Vehicle (ZEV), Aatmanirbhar Bharat, Digital India so on and so forth. With a growing market for electric vehicles (EVs), 5G/6G communication, and space missions in India, such an indigenous development, supported by the Department of Science and Technology (DST) is promising to make

India self-reliant for power transistor technology." The Global market for HEMT is forecasted to reach \$2.8 billion by 2026, growing at a CAGR of 15.2% from 2021 to 2026.

Recently announced Performance Linked Incentives by the Central government will catalyze electronic manufacturing and increase demand for

high-performance semiconductor material. Impetus on indigenous military materials under DAP 2020 will enable preferential procurement by the defence forces. The recent chip crunch has led many electronic companies to expand their manufacturing capabilities.

Another patent has been granted on "A fingerprint acquisition system for anti-theft Fingerprint biometry and method thereof".

The inventors Dr Amit Chatterjee, Prof Vimal Bhatia from IIT Indore, and Prof Shashi Prakash from IET DAVV, have proposed a novel image acquisition and processing unit for processing said fingerprint images to detect a match with stored fingerprint data to perform a fingerprint matching. Im-



Prof Vimal Bhatia

age acquisition and processing unit perform a biometric spoof detection by processing said time-series dynamic speckle image patterns, wherein a series of time-separated (0.05 seconds) speckle patterns recorded by using said image acquisition and processing unit.

The technical problem addressed by the invention is to provide a fingerprint acquisition system for anti-theft fingerprint biometry.

Vimal said, "A fingerprint pattern unique to each individual is registered in the storage device of the authentication system, but there may be a sense of rejection and a risk of personal information leakage. However, when the authentication method us-

ing speckle as in the present disclosure is used, the fingerprint pattern is not stored as it is, but speckle patterns with various interference fringes are stored according to location information such as the distance or angle between the fingerprint and the detector. Rejection in this method may be relatively less compared to the fingerprint authentication method."

Also, the inventors calculated the location information of the object by a speckle pattern generated by the light irradiated to the object. When the location information of the speckle pattern measured by the detector and the location information of the stored speckle pattern are substantially the same, the speckle-based authentication method compares the measured speckle pattern and the stored speckle pattern.