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INST develops light-powered nanocatalyst as cost-effective way to manufacture drugs and chemicals

29 May 2026 | News

To improve existing technologies by chemical reactions under more environmentally friendly conditions



A team of scientists from the Mohali-based Institute of Nano Science and Technology (INST) of the Department of Science and Technology (DST) has developed an innovative light-powered nano-catalyst to eliminate toxic solvents, high-temperature and energy-intensive processes in the manufacture of pharmaceuticals and industrial chemicals.

This makes these processes cleaner and far more energy efficient. Globally, there is a need to reduce pollution, energy consumption, and the use of toxic chemicals in industrial processes.

The nanomaterial has been designed and synthesised from a combination of gold, BODPI and palladium. It functions with the ability to absorb light energy by gold nanoparticles, which are again transferred to the BODPI molecule and finally to the active catalyst palladium. Palladium uses this transferred energy to conduct chemical reactions more efficiently, reducing energy consumption throughout the process.

Combining three different components – gold, BODPI, and palladium – into a single system helps in a more powerful and sustainable catalytic process.

This technology can enable cleaner and more cost-effective production of drugs and chemicals, reducing environmental pollution and energy consumption.