

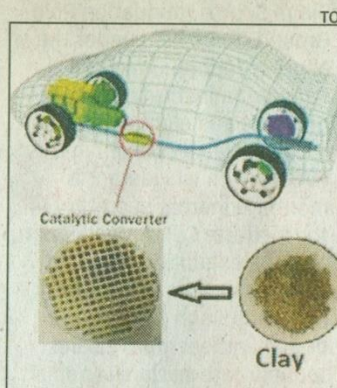
IIT-Jodhpur develops low-cost, low-emission converter using clay

TIMES NEWS NETWORK

Jodhpur: In a significant discovery, a team of IIT-Jodhpur's chemistry department has developed a catalytic converter for four-wheelers using Rajasthani clay.

This discovery is claimed to be far more effective in terms of cost and pollution reduction as against the current converters being installed in the vehicles by the auto-makers. The team led by professor Rakesh K Sharma has developed this catalytic converter using Rajasthani clay by extracting Iron-Nickel-Cobalt (Fe-Ni-Co) nano-particles from it and it has been patented.

Sharma said that automobile industries today have been facing stern challenges in terms of stricter emission regulations in an effort to reduce the amount of harmful air pollutants that are emitted by the vehicles. "Currently-used catalytic converters require rare earth elements, Palladium and Cerium. These ele-



The figure shows how the catalytic converter works

ments are not only highly expensive, but have to be imported," said Sharma adding that besides this, they have a shorter life span.

He further stated that these expensive metals make the catalytic converter one of the costliest parts of a car with price ranging from \$1,000-\$1,500. Each catalytic converter has about 5-7gm of pure Palladium, which costs around \$60 per gram, more expensive than gold. Despite that cost, the performance of catalytic

converters slows down with time in 8-10 years against the purported life of a car of about 15 years," said Sharma.

The research team, working on finding an alternate and cheaper solution to the existing catalytic converters, found Fe-Ni-Co present in Rajasthani clay as an alternative to Palladium and Cerium. "We had three challenges—reduction of temperature, replacement of Palladium and Cerium, and re-designing the converter to prevent metal deactivation in order to enhance its life span in the vehicles," said Sharma adding that working on Rajasthani clay turned out to be the perfect solution.

Sharma said that Rajasthani clay acts as oxygen reservoir and converts pollutants into other elements which are less harmful. The catalytic performance of the converters, so developed, was found to be better than conventional converters requiring temperature at less than 300 degrees, which means less pollution.