

## IIT-GN takes up research on alternate source of gasoline

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**Ahmedabad** : Indian Institute of Technology Gandhinagar (IIT-GN) has undertaken a research to develop a commercially viable and cost effective process to produce Syngas, an alternative source for making gasoline, a top official said.

The move is expected to benefit the expanding energy sector of India in reducing its carbon footprints.

Syngas or synthesis gas is a mixture of carbon monoxide and hydrogen gases in varying amounts. It can easily be converted into gasoline through a process called steam reforming, say experts.

Availability and making cost effective Syngas has been an issue, although established standardised technology to convert it into gasoline already exists there, they opine.

"Our research focus is to develop a cost effective and more commercially viable process to produce Syngas. This gas is easily storable, transferable and can even be converted into gasoline," says Prof Sundhanshu Sharma, the first recipient of prestigious Ramanujan fellowship at IIT-GN.

Research on producing Syngas has not progressed much in India as compared to developed economies, which are conducting extensive studies in pursuit of alternative fuel sources so as to reduce dependence on the fossil fuels.

"Area of research is to develop Syngas from-methane and carbon dioxide-which are naturally available and cheap too, by using a cheap material (catalyst), so it is more affordable and industrially viable," Sharma said.

Using methane and carbon dioxide would not only bring down Syngas producing cost, but also help reduce carbon footprint, he claimed.

According to experts, Syngas is presently produced through steam reforming process where generated steam is mixed with methane and passed over some material (catalyst like iron), which is a costlier method.

Another process of obtaining Syngas is through dry reforming which hasn't been explored much as efficiency is low, experts say.

At present there is not much output of Syngas industrially and then converting it into gasoline due to cost issues and economic viability, they say.

"Making methane by electrochemically reducing carbon dioxide is another useful thing, and one does not require expensive things to do it, so the cost is not very high," Sharma said, referring to making available cheaper sources to produce Syngas. Making useful products from carbon dioxide, a by product of industry and gas responsible for global warming, has been a challenge so far, Sharma said.

"Carbon dioxide can also be used to make methanol, which is mixed with gasoline to make it cheaper and more efficient," he said.

Syngas is also used as an intermediate in producing synthetic petroleum for use as a fuel or lubricant via the Fischer-Tropsch process.

The gas is combustible and often used as a fuel for internal combustion engines or as an intermediate for the production of other chemicals.

Syngas consists primarily of hydrogen, carbon monoxide, and very often some carbon dioxide also, and has less than half the energy density of natural gas.