Innovation: Scientists develop new catalysts to produce hydrogen fuel from water

Extraction of hydrogen from water through the process of electrolysis when powered by renewable sources of energy like wind and solar, is a convenient way to produce hydrogen fuel

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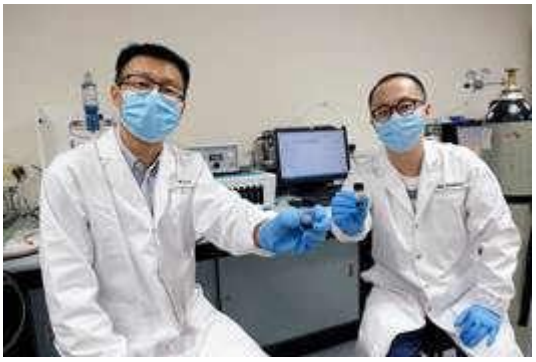

New Delhi: Scientists at the Nanyang Technological University, Singapore (NTU Singapore) have chalked out parameters that determine the efficiency of low-class catalysts called spinel oxides- a discovery that provides a breakthrough in the extraction of hydrogen from water through electrolysis, a process of splitting water with electricity.

Spinel oxides which are made up of cheap transition metals, have generated interests in recent years as a stable, low-cost catalyst that would overcome the challenge.

With this, the team led by NTU Singapore's Associate Professor Jason Xu Zhichuan have made two important advances. At the atomic scale, they have unravelled how spinel oxides work to speed up the process of electrolysis.

Secondly, these findings have made it possible to make water splitting a possible method of approaching large scale production of hydrogen gas. This also has been highlighted by the Energy Market authority of Singapore as one possible low-carbon alternative for reducing Singapore's carbon footprint, as the country hopes to halve it`s greenhouse gas emissions by 2050.

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fuel which has the potential to replace the fossil fuel used in plants, transport and bunkering processes.

Plus, hydrogen is also attractive to traditional energy storage solutions, such as the lithium ion batteries, which lose charge over time.

The NTU-led team was supported by researchers from institutes in Beijing and Hong Kong, in addition to those from Agency for Science, Technology and Research (A*Star) and National University of Singapore.

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