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IIT researchers develop technique to use lab waste for CO_2 capture

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Indore

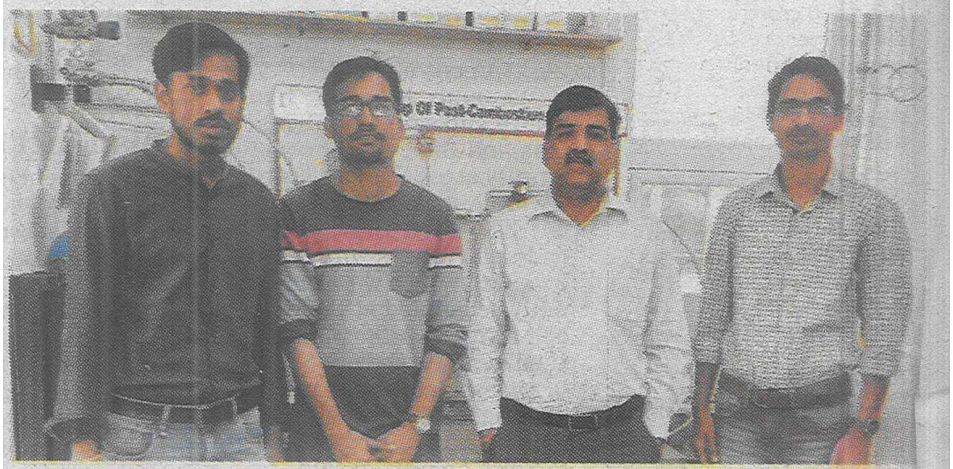
Indian Institute of Technology Indore has developed a method to upgrade polyethylene terephthalate to carbon capture material MIL-53 (Al) (a class of metal-organic frameworks, which are porous in nature and have high surface area).

A research team comprising Debashis Panda, Soumyadip Patra and Mahendra Awasthi under supervision of Dr Sanjay Kumar Singh, associate professor of chemistry at IIT Indore, used waste laboratory aluminium foils and PET-based water bottles to synthesise this porous material by extracting aluminium nitrate and terephthalic acid from aluminium foil and PET bottles respectively.

The synthesised material showed high efficiency and selectivity towards CO_2 capture (the major greenhouse gas in the atmosphere). In addition, they synthesised this porous material at a cost almost one-third of the analogous commercial material available in the market.

The group is working to explore possibility to use this material for CO_2 capture in the prototype of air purifier on which they are working on. This method is very much in line with the Green and Clean India concept, where Indore has progressed significantly well.

"Through this research, they have been able to answer the call for both solid waste management and mitigating the problem of excess CO_2 in the atmosphere, which are major areas of concern in a developing nation like India," said IIT Indore PRO Sunil Kumar. The researchers' work has been recently published in Journal of Chemical Education.



Left to right: Soumyadip Patra, Debashis Panda, Dr Sanjay Kumar Singh and Mahendra Awasthi