EMISSIONS REDUCTION

Greener carbon capture

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Credit: Tim Martin/Aurora/Getty

Greenhouse gas emissions continue to increase, so researchers are working to make carbon capture approaches cheaper and greener. One of the most promising methods is carbon adsorption onto a porous solid material, such as activated carbon. It is easy to use, low cost and requires little energy. To enhance CO₂ adsorption capacities without using toxic, expensive or corrosive materials, experts have developed manufacturing processes that specifically form microporous carbon materials with pore sizes <1 nm, but these processes can be energy intensive or corrosive.

Binbin Chang and colleagues at the Huanghe Science and Technology College in Zhengzhou, China have developed a method using heat treatment under aeration to quickly turn renewable sugar

into a highly CO₂-adsorbent crosslinked microporous carbon bead. These beads have large surface areas and well-defined microporous structures, and they can be regenerated using relatively little energy. By altering the carbonization temperature and reaction time, the carbon beads' pore sizes can be tailored to favour adsorption of post-combustion CO₂. No toxic solvents or corrosive chemicals are needed in the fast, simple carbonization process, so it is promising for large-scale industrial production.

Aimee Guha Roy

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