Promising new material for capturing CO2 from smokestacks

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Researchers have developed a material that could capture up to seven times more carbon dioxide from industrial sources, such as power-plant smokestacks. Credit: Photo by Dmitry Pichugin

Scientists and engineers in Georgia and Pennsylvania are reporting development of a new, low-cost material for capturing carbon dioxide from the smokestacks of coal-fired electric power plants and other industrial sources before the notorious greenhouse gas enters the atmosphere. Their study is scheduled for the March 19 issue of the ACS' *Journal of the American Chemical Society*.

In the new study, Christopher W. Jones and colleagues point out that existing carbon capture technology is unsuitable for wide use. Absorbent liquids, for instance, are energy intensive and expensive. Current solid adsorbents show promise, but many suffer from low absorption capacities and lack stability after extended use. Stronger, longer-lasting materials are needed, scientists say.

The scientists describe development of a new solid adsorbent coined a hyperbranched aminosilica (HAS) that avoids those problems. When compared to traditional solid adsorbents under simulated emissions from industrial smokestacks, the new material captured up to seven times more carbon dioxide than conventional solid materials, including some of the best carbon dioxide adsorbents currently available, the researchers say. The material also shows greater stability under different temperature extremes, allowing it to be recycled numerous times.

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