Sponge soaks up atmospheric carbon dioxide

Slide by Neil Goalby. Available from rsc.li/4cjZIvW

Activated charcoal 'sponges' can soak up atmospheric carbon dioxide and could help tackle climate change.

An electrical charge is passed through the charcoal, causing hydroxide ions to stick in the tiny pores of the porous structure of charcoal. The hydroxide ions then form chemical bonds with carbon dioxide and trap it from the air.

Turning off the current releases the captured carbon dioxide, allowing the charcoal sponge to easily be reused. The method offers a rapid, low-cost, energy-efficient way to capture carbon dioxide.

Can scientists sponge up CO_2 from the atmosphere?

Questions

1. What is the formula of a hydroxide ion?
2. What property of hydroxide ions allows the reaction with CO_2?
3. Explain how the process could help tackle climate change.