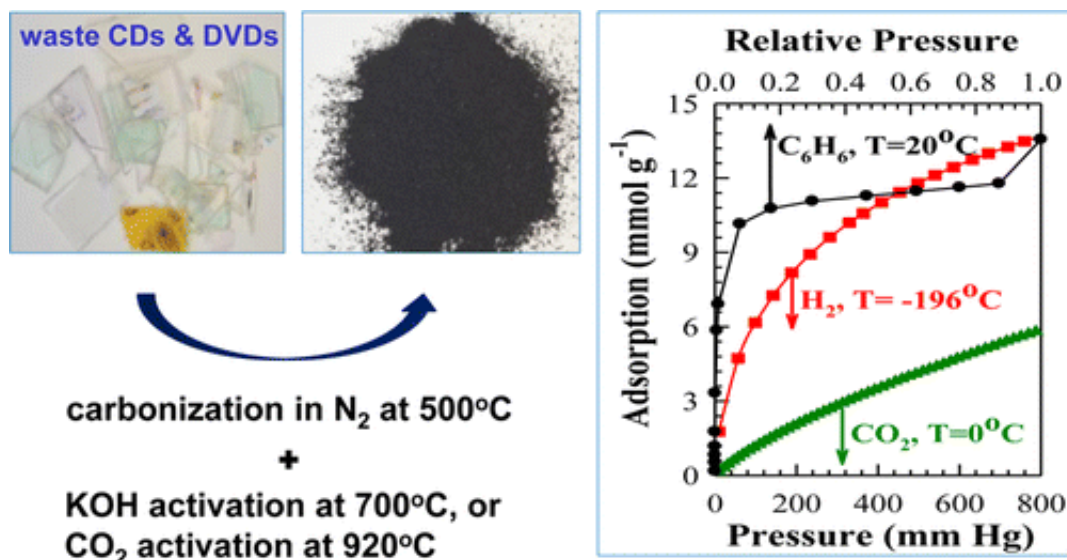


# How unwanted CDs and DVDs could help cut carbon emissions

April 8 2015



Now that most consumers download and stream their movies and music, more and more CDs and DVDs will end up in landfills or be recycled. But soon these discarded discs could take on a different role: curbing the release of greenhouse gases. In the journal *ACS Sustainable Chemistry & Engineering*, scientists report a way to turn the discs into a material that can capture carbon dioxide, a key greenhouse gas, and other compounds.

Mietek Jaroniec and colleagues from Poland and the U.S. note that manufacturers typically use natural sources, such as coal and wood, to

make activated carbon. The material is then incorporated in a wide range of applications from decaffeination to gas purification. More recently, scientists have been preparing activated carbon out of everyday plastic products. Jaroniec's team wanted to try this with optical discs, a fast-growing part of our waste stream.

The researchers processed disc fragments into two kinds of activated carbon with high surface areas and large volumes of fine pore. These key characteristics allowed the materials to capture carbon dioxide. They also adsorbed hydrogen gas and benzene, a carcinogenic compound used in industrial processes. The researchers say that in addition to carbon capture applications, their materials could be used to separate volatile organic compounds and store hydrogen.

**More information:** Adsorption Properties of Activated Carbons Prepared from Waste CDs and DVDs, *ACS Sustainable Chem. Eng.*, 2015, 3 (4), pp 733–742. [DOI: 10.1021/acssuschemeng.5b00036](https://doi.org/10.1021/acssuschemeng.5b00036)

### **Abstract**

Two sets of activated carbons have been prepared from waste CDs and DVDs by carbonization and subsequent activation with either KOH or CO<sub>2</sub>. The resulting activated carbons had specific surface area in the range of 500–2240 m<sup>2</sup> g<sup>-1</sup>, total pore volume in the range of 0.18–1.36 cm<sup>3</sup> g<sup>-1</sup>, volume of micropores and small mesopores (w

Provided by American Chemical Society

Citation: How unwanted CDs and DVDs could help cut carbon emissions (2015, April 8) retrieved 15 July 2024 from <https://phys.org/news/2015-04-unwanted-cds-dvds-carbon-emissions.html>

This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.