Transforming waste tires into high-efficiency CO_2 adsorbents through acid modification

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The growing concern over carbon dioxide (CO_2) emissions has prompted the search for sustainable solutions to mitigate their impact on the environment. This study explores the potential of repurposing waste tires, a significant environmental challenge, as efficient adsorbents for CO_2 capture. By utilizing an acid modification technique, waste tire powder is transformed into a high-performance CO_2 adsorbent [1,2]. The modification process enhances the material's surface properties, increasing its ability to adsorb CO_2. This approach not only provides an innovative solution to waste tire disposal but also contributes to the development of cost-effective and sustainable CO_2 capture technologies. The modified waste tire sorbent shows promising results in CO_2 adsorption capacity, demonstrating its potential for use in environmental applications. The study highlights the feasibility of converting waste materials into valuable resources for addressing global environmental challenges, aligning with the principles of circular economy and sustainability.

References 1) N. Jaree, et al., *Scientific Reports, 15*, 29618 (2025). 2) P. Toh-ae, et al., *Scientific Reports, 14*, 17100 (2024).

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