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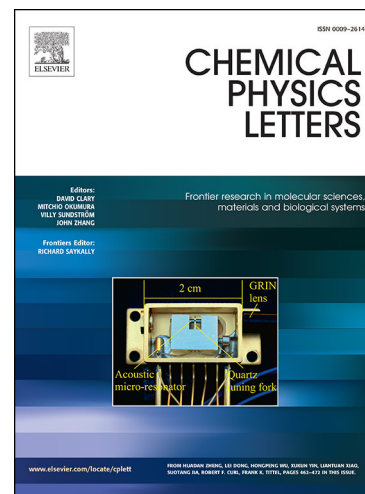
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Preparation of nitrogen doped carbon from tree leaves as efficient CO₂ adsorbent

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Abstract

In this work, we reported the synthesis of nitrogen doped carbons from camphor tree leaves. The leaves were carbonized and then activated with KOH, and the nitrogen element in the leaves was used as the nitrogen source. The carbon showed a high surface area of 1736 m²/g. A high CO₂ uptake of 5.86 mmol/g at 1 bar and 273 K was achieved by the carbon activated at 600 °C. The test results also revealed that for carbons with similar volume of small micropores, the one with a high nitrogen content tended to achieve better adsorption performances.

Keywords: Camphor leaves; Nitrogen doping; Porous carbons; CO₂ adsorption.

1. Introduction

CO₂ emission control has been considered to be a crucial necessity [1]. Aqueous amines are commonly used to adsorb CO₂ from the flue gas, but they are corrosive, toxic and not easy to regenerate [2]. Nanoporous materials can interact with CO₂ through physisorption, the process is fast and reversible, also the desorption demands much small energy consumption, creating an alternative and promising path for CO₂ capture.

The CO₂ adsorption behaviors of porous carbons depend on various features, for

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