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### **The effect of chemical activating agents on the morphology and structure of bio-derived activated carbon**

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Recently, activated carbon (AC) has attracted more and more attention since it exhibits various properties, including operated pore size and morphology, strong mechanical and physico-chemical stability, good absorption capacity and crucially important, large surface area. This makes it an ideal material for use in energy storage, metal recovery, air purification, medical wastewater treatment, water purification, gas storage, and removal of caffeine.

In this study, ACs were fabricated by single-stage carbonization and activation of a carbon precursor with four different chemical activating agents such as potassium hydroxide (KOH), zinc chloride (ZnCl<sub>2</sub>), phosphoric acid (H<sub>3</sub>PO<sub>4</sub>) and sulfuric acid (H<sub>2</sub>SO<sub>4</sub>), respectively. Agar-agar was used as a bio-derived carbon precursor due to its high carbon content and the lack of any traces of heavy metals. The effect of the activating agents and the weight ratio of activating reagents / precursor as well as the nature of the precursor have been examined and discussed. The morphological and textural properties of ACs were investigated using an electron scanning microscope (SEM), X-ray diffraction (XRD), Raman and FTIR techniques.

**Key words:** activated carbon, agar-agar, activating reagents.

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