

## **Lignocellulosic biomass waste as precursor for the preparation of activated carbon monoliths for alcohol dehydration**

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Activated carbon monoliths (ACMs) from different lignocellulosic biomass waste, such as olive stone (OS), Alcell (AL) and Kraft lignin (KL), were prepared by the direct extrusion of the precursors with phosphoric acid, followed by activation under inert atmosphere, and washing with distilled water.

These activated carbon monoliths were used as catalysts for alcohol dehydration reaction. The highest conversion for 2-propanol decomposition was obtained by the ACMs derived from olive stone. Selectivity to propylene was quite high at all the evaluated temperatures, being higher than 90% from 250 °C, for all the ACMs. The values for the apparent activation energies (supposing a first-order kinetic) are quite similar, ranging from 100 to 130 KJ/mol.

Methanol decomposition reaction was also analyzed under air atmosphere. The highest conversion obtained, without a significant burn-off of the carbonaceous matrix, is approximately 70% at 375°C, being OS the most active ACM, followed by KL and AL catalyst. The possible influence of the monolithic conformation was also analyzed by comparing to powder activated carbon with the same physico-chemical properties. Furthermore, several kinetic models were evaluated to predict the methanol conversions, taking also into account the competitive influence of water.