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Conversion of waste corncob to activated carbon for use of methane storage

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Missouri being one of the leading states in corn production has a large quantity of corn cobs. Corn cob can be used to produce activated carbon because its organic origin is similar to coconut and peach pits which have been previously used to make activated carbons. In this project, researchers at the University of Missouri Columbia are using adsorbents produced from corn cobs to store natural gas. Results have shown that a BET surface area of 800m²/g-1600m²/g can be obtained. Scanning Electron Microscope (SEM) images confirms that micro porous nature of the carbon. The main objective of this research is to develop flat low pressure high capacity natural gas tank holding no greater than 500psi of methane, allowing for more trunk space in cars. It is anticipated that the new Absorbed Natural Gas (ANG) will be the competitor with Compressed Natural Gas (CNG) which is currently stored in heavy tanks at high pressures of about 3600psi. Activated carbons obtained from the corn cob that has been through chemical activation process are used to make monoliths, in order to achieve the maximum density. The powdered form of the activated carbon is combined with a binding agent and pressed using a hydraulic press and die. By this process corn cobs can be converted into monolithic carbon and having methane uptake of 150v/v or more.