



EFFECT OF ACTIVATED CARBON PARAMETERS ON THE SURFACE PROPERTIES OF WHEAT STRAW RESIDUE

Yunus Emre Şimşek

Bilecik Şeyh Edebalı University, Bilecik, Turkey
yunusemre.simsek@bilecik.edu.tr

Activated carbon has perfectly developed porosity, a large surface area (up to 3500 m² g⁻¹), and modifiable surface chemistry properties and exhibits a comparatively high degree of surface reactivity. Due to these reasons, activated carbon is regarded as a very efficient adsorbent that could be used for various purposes in industry. The obtainment of activated carbon from agricultural byproducts, wastes and residues is a wide field of research which generates plenty of interest in recent years. Two existing methods are used for the production of activated carbon: chemical (wet) and physical (dry) activation. In chemical activation, the candidate adsorbent is produced impregnating with various acids and mineral salts, followed by carbonization with heating at elevated temperatures in an inert atmosphere. This study presented deals with the production of the activated carbon obtained from agricultural residue, wheat straw, abundant in Turkey. Activated carbon materials (ACMs), prepared at different impregnation ratios and carbonization temperatures, and were investigated for a candidate adsorbent. ACMs as novel adsorbent were prepared for low-cost and locally available source in the city of Bilecik, Turkey such as wheat straw residues. ACMs were produced in a tubular reactor. These new adsorbents produced were characterized by proximate, ultimate and elemental analysis, Brunauer-Emmett-Teller (BET) surface area, scanning electron microscopy (SEM), Fourier transform infrared (FTIR) spectroscopy. The results clearly showed that both chemical and surface properties of the activated carbon materials were affected by the impregnation ratio and reactor temperature.

Keywords: Activated carbon, adsorbent, agricultural waste, chemical activation, surface properties.

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