

**ACTIVATED CARBON:
PREPARATION, CHARACTERIZATION AND ADSORPTION
CAPACITY**

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ABSTRACT

ACTIVATED CARBON: PREPARATION, CHARACTERIZATION AND ADSORPTION CAPACITY

Surface-active agent or also known as surfactants was one of water pollutant that can lead to deterioration of environment. In this study, activated carbon was prepared from date stones (DAC) by using phosphoric acid as an activating agent. The activation process was done at 500 °C for two hours. The prepared activated carbon, DAC was characterized by Fourier-Transformed Infrared Spectrometer (FTIR), gravimetric analysis, Field Emission Scanning Electron Microscopy (FESEM), Energy-Dispersive X-Ray Spectroscopy (EDX) and nitrogen adsorption at 77 K. The BET surface area of DAC was 1187.6844 m²/g. The adsorption capacity of surfactants, (CTAB and TX-100) and the effects of concentration (CMC) also were determined. This study showed that the adsorption capacity of CTAB (23.0724 mg/g) onto the prepared activated carbon, DAC was greater than TX-100 (11.3868 mg/g). The adsorption process between surfactants (CTAB and TX-100) onto the prepared activated carbon, DAC was physisorption through electrostatic forces (Wan der Wall forces). Thus, this study showed that date stones have a greater tendency as microporous activated carbon and also as an adsorbent to remove surfactants.