E2-35 Preparation and characterization of charcoal from coir dust

R D A Wickramanayake, P Ganhewage, D P Dissanayake
Dept of Chemistry, University of Colombo, Colombo 3

Coir dust ("Kohubath") (the remains after extraction of the coir from coconut husk), is largely unused in Sri Lanka. This valuable raw material has recently found application in the packaging industry as a biodegradable packaging material. It is also used as a moisture retainer in gardening. We have prepared and characterized a charcoal from this raw material which shows excellent adsorption properties towards large nonpolar molecules.

This charcoal may be used to clean oil contaminated water by selectively adsorbing oil from oil-water suspensions. The adsorption properties were compared with several other commercially available charcoals. It was observed that the coir dust charcoal, after steam activation or boilling in water, has remarkably high adsorption capacities (7 ml/g) compared to other charcoals (1 to 4 ml/g) for selective adsorption (selectivity for diesel is 86% from a suspension of 1:1 diesel:water) of diesel from a diesel-water suspension. the charcoal was prepared by heating dried coir dust in an oxygen-free environment. This treatment yielded a black soft charcoal (density ~ 0.06 g/mL) and this was further treated in steam or boiling water. There treatments improved the adsorption capacity. The charcoal samples were characterized by iodine adsorption (Amercian standard test method, D 1510-84).