

## **High-surface-area and nitrogen-rich mesoporous carbon material from fishery waste for effective adsorption of methylene blue**

### **Abstract**

A high quality nitrogen-rich mesoporous carbon material (FSAC) was prepared from carbonized fishery waste through chemical activation using NaOH. The obtained material had a high surface area of 1867 m<sup>2</sup>/g, pore size of 2.5 nm and mesopore volume of 0.38 cm<sup>3</sup>/g. The adsorption efficiency of FSAC was examined for methylene blue (MB) removal from aqueous solution in batch method. The effects of initial concentration of dye (25–400 mg/L), temperature (30–50 °C) and pH (3 – 11) on the adsorption of MB on FSAC were studied. Evaluation of MB uptake by FSAC revealed that Langmuir isotherm and pseudo-second-order adsorption model adequately described the experimental data. The FSAC spontaneous and endothermic MB uptake at 30 °C gave high adsorption capacity of 184.40 mg/g. These results show that FSAC can be used as an efficient and low cost adsorbent for cationic dye removal.