

## **Kinetic and equilibrium modelling of lead sorption from aqueous solution by activated carbon from goat dung**

### **Abstract**

The potential of goat dung-derived activated carbon as an adsorbent for the removal of lead from aqueous solution in a batch system was studied. Physicochemical properties of the biosorbent were characterized by means of X-ray diffraction, scanning electron microscopy and Fourier transform infrared spectroscopy. Batch adsorption experiments were carried out as a function of pH, contact time, adsorbent dosage, initial concentration and temperature. The adsorption showed a pH dependent profile and an optimum value at pH 4.5. The adsorption isotherm modelling showed that the equilibrium data fitted better to the Freundlich than the Langmuir model. Kinetic data were properly fitted with the pseudo-second-order kinetic model. Furthermore, the thermodynamic parameters indicated that the adsorption reaction was endothermic and a spontaneous process.