**Abstract**

A novel activated carbon prepared from profusely available bio-waste material, goat dung is employed for anionic dyes removal viz., DirectBrown2(DB2) andReactiveRed152(RR152) from aqueous solutions. GoatDung Activated Carbon-Cobalt Ferrite Magnetic Composite (GDACCFMC) is synthesized by auto-combustion method. The surface characteristics of the prepared adsorbents are analyzed by SEM, EDAX, BET and BJH and the size of the synthesized GDACCFMC is characterized by AFM. From the AFM results, the synthesized GDAC-CFMC is found to be lesser than 3 nm. The magnetic property of GDAC-CFMC is characterized by using vibrating sample magnetometer (VSM) equipment which reveals its excellent magnetic performance in dye removal. The batch equilibration experiments pertaining to the inﬂuence of operating factors viz., varying initial dye concentrations, doses of sorbent materials, preset time intervals, variable pH and temperature environments are substantiated to evaluate the sorptive nature. Adsorption is observed to be more pronounced at acidic pH. Sorption eﬃciency of Goat Dung Activated Carbon (GDAC) is compared with the derived GDAC-CFMC, whose experimental results indicate better performance of the magnetized material. The isothermal adsorption data ﬁts well with Freundlich isotherms. The thermodynamic studies reveal that the adsorption process is favourable, exothermic and spontaneous. Adsorption kinetic studies favour the systems to follow the second-order. The aftermath of the present work implies that both GDAC and GDAC-CFMC can be eﬀectively used as potential adsorbents for trapping the dye molecules.