**ABSTRACT**

Magnetite (Fe3O4) nanoparticles were prepared by solvothermal method and its composites with reduced graphene oxide namely FG1, FG2, and FG3 (changing magnetite precursor loading 0.1, 0.5, and 1 respectively) were used as adsorbents for the removal of methyl violet (MV) dye. The structural and morphological results confirm that rGO sheets were decorated with Fe3O4 and it ensures the variation of active sites toward dye removal property. The maximum adsorption capacity obtained for FG2 was 196 mg/g. The adsorption isotherms and kinetics better fit Langmuir and pseudo-second-order kinetic model for FG1 and FG2. Increasing of Fe3O4 loading on rGO reduces the dye adsorption sites and too low Fe3O4 loading affects the magnetic separation. The optimal loading of Fe3O4 on rGO is important parameter for the adsorption process and fast separation of adsorbent.