**ABSTRACT**

The purpose of this study was to evaluate how well the use of acetic and propionic acids performed in the Hummers technique of graphene oxide production in place of phosphoric acid. Three trials were conducted using the Hummers method to ascertain the effects under the same conditions and using just phosphoric acid, acetic acid, and propionic acid. Particle size distribution analyses, Zeta Potential, surface area measurement with BET, and structure characterisation with FTIR were all used to characterize the effects. Explosions occasionally occurred during the propionic acid experiment due to the fast and exothermic reaction mechanism, which had an adverse effect on the oxidation mechanism. The effective synthesis of graphene oxide was achieved through controlled oxidation in the presence of phosphoric and acetic acids. Using phosphoric acid and the traditional Hummers TOUR method, the best outcome was achieved between these two compounds. Using the graphite sample as a reference, the recovery rates for surface area, particle size, and zeta potential were found to be -19.72%, 39.95%, and 61.50%, respectively. The FTIR measurements showed that the synthesis of graphene oxide using acetic acid and propionic acid was successful, whereas the synthesis using propionic acid was not successful.