**ABSTRACT**

Reduced graphene oxide is an excellent candidate for various electronic devices such as high performance gas sensors. In this work Graphene oxide was prepared by oxidizing graphite to form graphite oxide. From XRD analysis the peak around 11.5o confirmed that the oxygen was intercalated into graphite. By using hydrazine hydrate, the epoxy group in graphite oxide was reduced then the solution of reduced graphite oxide (rGO) is exfoliated. Raman spectrum of rGO contains both G band (1580 cm-1), D band (1350 cm-1). The remarkable structural changes reveals that reduction of graphene oxide from the values of ID/IG ratio that increase from 0.727 (GO) to 1.414 (rGO). The exfoliated reduced graphite oxide solution is spin coated on to the SiO2/Si substrates.