

## **Incorporation of surface plasmon resonance with novel valinomycin doped chitosan-graphene oxide thin film for sensing potassium ion**

### **ABSTRACT**

In this study, the combination of novel valinomycin doped chitosan-graphene oxide (C-GO-V) thin film and surface plasmon resonance (SPR) system for potassium ion ( $K^+$ ) detection has been developed. The novel C-GO-V thin film was deposited on the gold surface using spin coating technique. The system was used to monitor SPR signal for  $K^+$  in solution with and without C-GO-V thin film. The  $K^+$  can be detected by measuring the SPR signal when C-GO-V thin film is exposed to  $K^+$  in solution. The sensor produces a linear response for  $K^+$  ion up to 100 ppm with sensitivity and detection limit of  $0.00948^\circ \text{ ppm}^{-1}$  and 0.001 ppm, respectively. These results indicate that the C-GO-V film is high potential as a sensor element for  $K^+$  that has been proved by the SPR measurement.

**Keyword:** Surface plasmon resonance; Chitosan; Graphene oxide; Valinomycin; Potassium ion.