

## **Biopolymer-based thin film for sensor application**

### **ABSTRACT**

Chitosan is one of the most available biopolymers in nature, which is non-toxic, biocompatible and biodegradable. The crosslinked chitosan solution was synthesized by homogeneous reaction of medium molecular weight chitosan in aqueous acetic acid with glutaraldehyde as crosslinking agent. Then the solution was deposited on glass cover slip by spin coater to form a thin film. The functional group and chemical binding of crosslinked chitosan thin film has been confirmed by X-ray photoelectron spectroscopy (XPS). The chemical interaction between copper ion and the crosslinked chitosan thin film has also been analyzed by XPS. XPS revealed that copper ion adsorbed to the crosslinked chitosan thin film and the functional groups involved in the adsorption mechanisms of copper ion on the thin film were determined. This biopolymer thin film can be incorporated with surface plasmon resonance technique to produce a high potential optical sensor for detection of Cu (II) ion in solution.

**Keyword:** Biopolymer; Chitosan; Thin Film; X-ray photoelectron spectroscopy; Surface plasmon resonance; Sensor