

## Immobilization of tetrabutyl thiuram disulfide in chitosan thin film for sensing zinc ion using surface plasmon resonance spectroscopy

### Abstract

Tetrabutyl thiuram disulfide (TBTDS) immobilized in chitosan thin film has been studied as a sensor element for zinc ion,  $Zn^{2+}$ , using surface plasmon resonance (SPR). The TBTDS-immobilized chitosan thin film, which acts as an active layer, was coated on a gold film by spin coating.  $Zn^{2+}$  can be detected by measuring the SPR signal when TBTDS-immobilized chitosan thin film contacts with  $Zn^{2+}$  in solution. The sensor produced a linear response for  $Zn^{2+}$  ranging from 0.1 to 1 ppm with a sensitivity of 0.0317 degrees ppm<sup>-1</sup>. Using immobilized TBTDS as an active layer, the  $Zn^{2+}$  can also be selectively detected when present in mixtures of heavy metal ions.

**Keyword:** Surface plasmon resonance; Tetrabutyl thiuram disulfide; Chitosan; Zinc ion.