

## Development of surface plasmon resonance spectroscopy for metal ion detection

### ABSTRACT

Surface plasmon resonance (SPR) spectroscopy has emerged as an optical sensor for sensing a variety of analytes, including metal ions. However, despite its numerous advantages, which include very high sensitivity, simple sample preparation, low cost, fast measurement capability, no requirement for reference solution, high reproducibility, ability to monitor kinetic behaviour, label-free detection, and nondestructiveness, the SPR optical sensor has to compete with existing methods especially in terms of sensitivity and selective detection. A critical review of the use of SPR in metal ion detection is presented. It describes the instrument and different developments on active layers or recognition molecules for sensitivity and selectivity improvements. In conclusion, progress in SPR optical sensor technology will further expand SPR detection abilities and allow SPR sensing to be used widely including in environmental monitoring as an effective metal ion sensor in the future.

**Keyword:** Surface plasmon resonance; Metal ion; Optical sensor