**Detection of copper (II) ion on chitosan film using microstrip ring resonator**

ABSTRACT

The detection of copper (II) ion (Cu2+), using chitosan film and ring resonator is presented in this paper. Chitosan has the ability to adsorb metal ion due to abundant reactive amino and hydroxyl groups. The adsorption amount is confirmed using Atomic Absorption Spectroscopy and the mechanism of ion conduction in the film, due to adsorption of Cu2+ ion was examined using impedance spectroscopy. The film was then introduced to ring resonator to detect the presence of Cu2+ ion at a frequency of 5 GHz. Results show that the film can adsorb Cu2+ ion at low concentration of 1 mg/l and the ring resonator together with chitosan film is able to detect the presence and changes in Cu2+ ion concentration from the shift in the resonance frequency. This shift in the resonance frequency was then used to calculate the Q factor and effective permittivity of the chitosan film.

**Keyword:** Chitosan Film; Copper (II) Ion; Ring Resonator