

## **Microwave-based biosensor for glucose detection**

### **ABSTRACT**

In this project, microwave-based biosensor for glucose detection has been studied. The study is based on the dielectric properties changes at microwave frequency for glucose-enzyme reaction. Glucose interaction with glucose oxidase (GOD) produced gluconic acid and hydrogen peroxide. The reaction of the glucose solutions with an enzyme was carried out in 1:3 of glucose and enzyme respectively. The measurements were done using the Open Ended Coaxial Probe (OECF) coupled with computer controlled software automated network analyzer (ANA) with frequency range from 200MHz to 20GHz at room temperature (25 °C). The differences of enzyme and glucose-enzyme reaction were calculated and plotted. In the microwave interaction with the glucose-enzyme reaction, ionic conduction and dipole molecules was detected at 0.99GHz and 16.44GHz respectively based on changes of dielectric loss factor.

**Keyword:** Microwave; Biosensor; Glucose