

Study of dual open ended coaxial sensor system for calculation of phase using two magnitudes

Abstract

A dual open ended coaxial sensor system to determine complex permittivity was studied in detail. This paper focuses on determination of a reflection coefficient phase from two magnitudes using modified capacitance model from 300 kHz to 8 GHz. The phase information can then be used for calculation of the sample's complex permittivity. Factors such as range and limitation of the model, sample's permittivity, operating frequency, and size of sensor were investigated. Sensitivity of calculated phase with respect to small changes in measured magnitude was carried out.

Keywords; Dual open ended coaxial sensor, phase determination, modified capacitance model, reflection coefficient