Abstracts

Temperature Sensitivity of Coaxial Probe Complex Permittivity Measurements: Experimental Approach

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An experimental investigation of the temperature sensitivity of the Teflon dielectric semi-rigid coaxial probe used in complex permittivity measurements is presented. Measurements are performed over the frequency range extending from 100 MHz to 26.5 GHz using 2.2 mm and 3.6 mm coaxial probes at a number of temperatures. An acute sensitivity of the probe-tip geometry to temperature is revealed along with its affect on measured complex permittivity. Measurements are further complicated by the nonlinear thermal phase response of the probe which results in hysteresis apparitions appearing in the measured complex permittivity during thermal cycling. The potential for removing these errors through temperature correction and the use of thermally stable probes is discussed.

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