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Dielectric Response of Gallium Arsenide (GaAs), Lead Zirconate Titanate (PZT) and Other Select Materials in a Microwave Field JAMES ROBERTS, AMAN ANAND, University of North Texas, JAI DAHIYA, Southeast Missouri State University — A cylindrical microwave resonant cavity mode was used to study the response of select materials undergoing microwave response over temperature. The microwave response of some semiconductor materials was studied by using a raw as well as a ground sample. The sample were placed in a fine capillary tube, which in turn was placed into the microwave field of the resonant cavity. The cavity was cooled over the desired temperature by using liquid nitrogen heat exchanger with the temperature continually monitored with a thermocouple. The resonant signal of the microwave cavity was displayed on an oscilloscope and recorded in a computer, along with the temperature from the thermocouple, for future analysis. This process eliminates any errors being introduced in the frequency shifts and the width changes being recorded at various temperatures. Slater's perturbation equations were used to calculate the dielectric constant of each sample as a function of temperature at several microwave frequencies

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