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Microwave Resonant Cavity and Loaded Carbon Nanotubes – A Sensor to Detect Toxins like Methamphetamine[1] AMAN ANAND, JAMES ROBERT, University of North Texas, DON HENLEY[2], Office of Technology Transfer, UNT, JAI DAHIYA[3], Southeast Missouri State University — A resonant cavity operating in TM_{010} mode was used to study the absorption response of Single Walled Carbon Nanotubes and other Nanomaterials for different types of gas molecules. The range of the frequency signal as a probe was chosen arbitrarily between 9.1 -9.8 GHz. A highly specific range will be studied for further experiments. It was found that for different pressures of different gases and different types of Nanomaterials, there was a different response in the shifts of the probe signal for each cycle of gassing and degassing of the cavity. The preliminary work done so far suggests that Microwave spectroscopy of the complex medium of gases and Carbon Nanotubes can be used as a highly sensitive technique in studying the complex dielectric response of different polar as well as non-polar gases when subjected to intense electromagnetic fields within the Cavity.

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