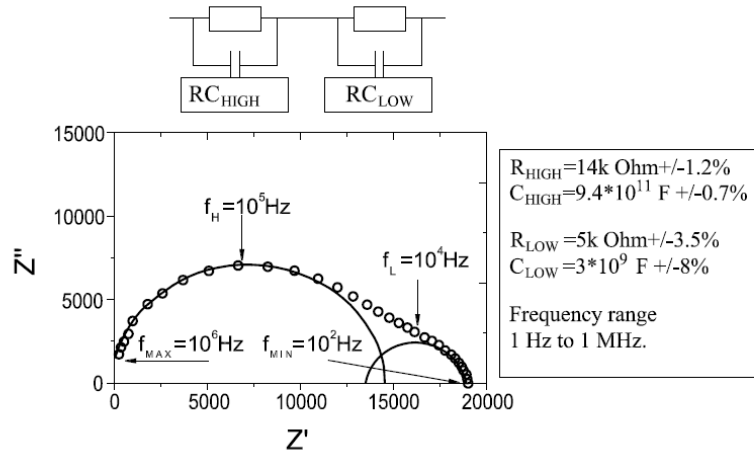


DIELECTRIC CONSTANT OF PARTICLES DETERMINED BY IMPEDANCE SPECTROSCOPY

A method of measuring the dielectric constant of a powder, including selecting a powder having an unknown first dielectric constant, selecting a liquid having a known second dielectric constant, and introducing a predetermined amount of powder into a predetermined volume of liquid to define a slurry characterized by a known volume fraction of powder. The impedance spectra of the slurry are plotted over a predetermined frequency range, the measured dielectric constant data is read and the appropriate equivalent circuit for the slurry is determined. Appropriate equivalent circuit equations are applied to the measured dielectric constant data and the first dielectric constant is calculated from the appropriate equivalent circuit equations, known volume fraction of powder and measured dielectric constant data.

Graph of the calculated dielectric constant of SrTiO₃ particles as a function of increasing solid loading in butoxyethanol slurries according to the present novel technology.



POTENTIAL AREAS OF APPLICATIONS:

- Manufacturing of capacitor, microwave, packaging, multilayer co-fire, thin film, and high temperature dielectrics
- Bluetooth dielectric resonator antennae
- Dielectric research and development

PATENT STATUS: US Utility Patent Application Allowed

INVENTOR(S): Vladimir Petrovsky; Fatih Dogan

CONTACT INFO: Keith Strassner; kdstrass@mst.edu; 573-341-6725

Eric Anderson; ericwa@mst.edu; 573-341-4551; Vera Anderson; vera@mst.edu; 573-341-7263