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Application of Conformal Mapping in Analysis the Parallel Stripline Resonator

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A microplasma system source based on microwave parallel stripline resonator (MPSR) was developed for the generation of microplasmas in a wide range of pressure from some torr to 760 torr. This source was operated at its resonance frequency that much depends upon not only its discharge gap size but also operated pressure. This paper applied a simple circuit model to analyze the effects of discharge gap size and pressure to resonance frequency and impedance of MPSR in the cases with and without plasma exist inside the discharge gap. In the process of calculating, the conformal mapping method was used to estimate the capacitance of the MPSR. The calculating results by using circuit model agree well with the simulation results that using commercial CST microwave studio software.

Reference

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