

## **A two-dimensional study of the capacitively coupled plasma discharge considering the effects of multiphysics**

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Plasma simulation methods were used to analyze discharge characteristics including the flow and heat transfer of the gas in the capacitively coupled plasma discharge. In this study, two - dimensional axisymmetric structure was assumed, which is common in the semiconductor device processes. Laminar flow model was used to calculate flow, heat transfer was considered to determine the temperature of the gas. Fluid description of plasma model was combined with flow and heat transfer models. Also, electron energy distribution function (EEDF) was obtained using two - term Boltzmann approximation. The plasma region was divided multiple zones, to consider the spatial variation of EEDF. Standing wave effect in the plasma discharge was added to investigate the electromagnetic field effect according to process conditions and driving frequencies.

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