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Instructions for Abstract：The Japan Society of Plasma Science and Nuclear Fusion Research

Modeling of Low Temperature, Non-equilibrium Discharges with COMSOL Multiphysics®

COMSOL Multiphysics®による低温非平衡放電のモデリング

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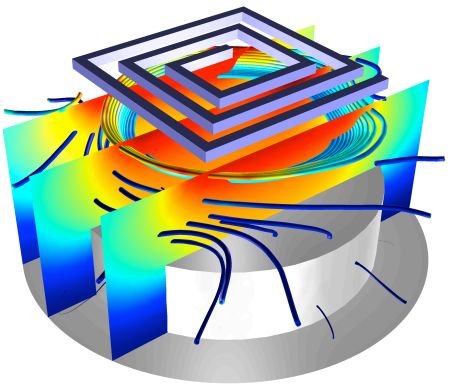
You can model and simulate any physics-based system using COMSOL Multiphysics, which provides a set of predefined user interfaces with associated modeling tools, referred to as physics interfaces, for modeling applications of low-temperature, non-equilibrium discharges. The finite element method is used to solve the governing equations and arbitrary chemical mechanisms can be defined. This allows modeling of both electropositive and electronegative discharges with any number of volumetric and surface reactions. The pressure range can also be arbitrary (from mTorr up to several atm), provided the plasma remains collision dominated. The frequency can take any value from static (DC discharges), up through the kHz range (for dielectric barrier discharges), the MHz range (for inductively coupled plasmas) and the GHz range (for wave heated discharges).



3D model of an asymmetric ICP reactor
The plot shows the mean electron energy (slice) and the electric current density (streamlines).

非対称 ICP 反応器の三次元モデル
平均電子エネルギ(断面表示)および電流密度ベクトル場(流線表示)