

PLASMATOR CAPABILITIES



PLASMATOR CAPABILITIES: Discharge Model

● Finite Rate Plasma Chemistry

- ◆ 30+ species (ions and neutrals)
- ◆ 100+ reactions
- ◆ gas phase (Arrhenious or cross-section based)
 - ionization
 - dissociation
 - dissociative attachment
 - metastable excitation
 - ─ electronic
 - ─ vibrational
 - ─ rotational
 - recombination
 - charge transfer
 - Penning ionization
- ◆ surface
 - metastable quenching
 - neutralization
 - etch
 - deposition

PLASMATOR CAPABILITIES: Discharge Model

- **Electron Continuity and Energy**
- **Electron Energy Distribution Functions**
 - ◆ Maxwellian
 - ◆ Druyvesteyn
 - ◆ Boltzmann Soln.
- **Ion Momentum and Continuity for Each Species**
- **Electro-positive or Electro-negative Plasmas**
- **Diffusion Dominated Neutrals**
- **Pressure Range 0.001 – 10 Torr**
- **Cartesian (x,y) or Cylindrical Geometry (r,z)**

PLASMATOR CAPABILITIES: Discharge Model

● Inductively Coupled Discharges

- ◆ multiple coils / frequencies
- ◆ circuit model
- ◆ power formulation
- ◆ capacitive component
- ◆ sheath model

● Capacitively Coupled Discharges

- ◆ multiple electrodes / frequencies
- ◆ circuit model
- ◆ power formulation
- ◆ automatic floating bias
- ◆ sheath resolved with non-uniform mesh

● DC Discharges

● Secondary Electron Emission