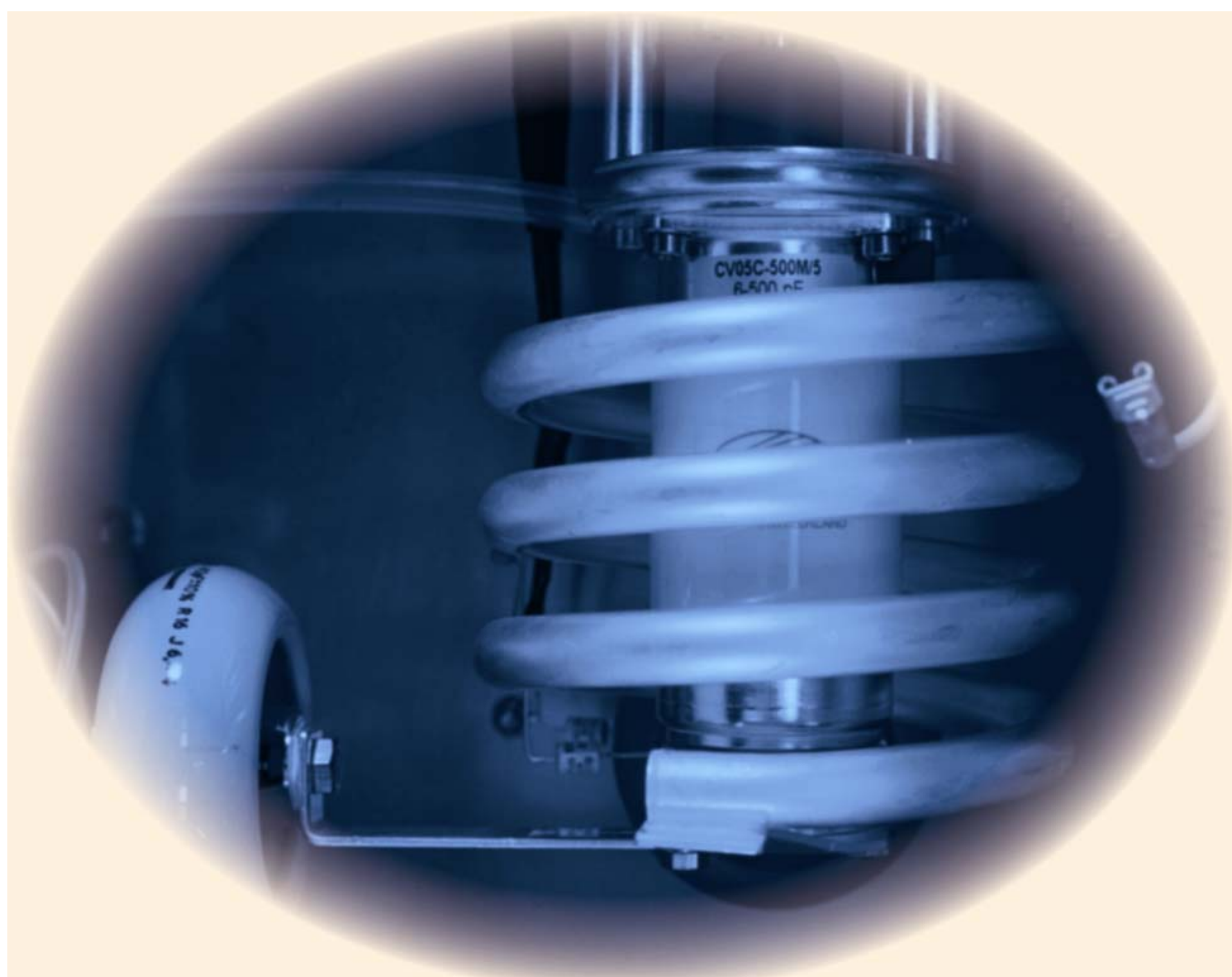
THINKING AHEAD

Aurion´s
Radio Frequency Workshop



Contents

1 Plasma process technology

1 Ionization and plasma
2 Plasma cleaning
3 Plasma activation
4 DC - sputtering
5 RF - sputtering
 5.1 RF - generator
 5.2 Matchbox
 5.3 Self - bias
6 Magnetron - sputtering
7 Etching
8 Reactive processes
 8.1 Reactive sputtering
 8.2 Reactive ion etching (RIE)
9 PECVD

2 Radio frequency components

1 Materials
 1.1 Insulators
 1.2 Conductors
2 Capacitors
 2.1 Ceramic capacitors
 2.2 Vacuum capacitors
 2.3 Capacitor drives
 2.4 Couplings
3 Coils
4 Housings
5 RF - sealing / contacts
 5.1 Contact strips
 5.2 Grids / honeycomb chimney
 5.3 Viewing ports
 5.4 Connectors
 5.5 Vacuum relays
 5.6 Pneumatic switches
6 Cables and conductors
 6.1 Connections
 6.2 Contacts

6.3 Distances and leakage paths
6.4 Insulators
7 Housing and shielding
7.1 Doors and lids
8 Temperature and cooling
8.1 Isolation paths

3 Impedance - matching

1 Current and voltage
1.1 DC: Direct current, direct voltage, resistance
1.2 RF: Alternating current, alternating voltage, resistance
1.3 RF: Capacitors and inductivities
2 Inner resistance and load resistance
2.1 DC - electrode
2.2 RF - electrode
2.3 Pointer diagram
2.4 Real and reactive power
3 Matching circuits
4 Smith-Chart
5 Waves on conductors
5.1 Matching
5.2 Mismatch
5.3 Forward and reflected power

4 Measurements and trouble shooting

1 Set-up RF - generator
2 Set-up matchbox
3 Measurement interfering radiation
4 Measurement with the probe
5 Measurement with the oscilloscope
6 RF - start-up
6.1 Preparation
6.2 Igniting plasma
7 Trouble shooting
7.1 No plasma ignition
7.2 Reflected power too high