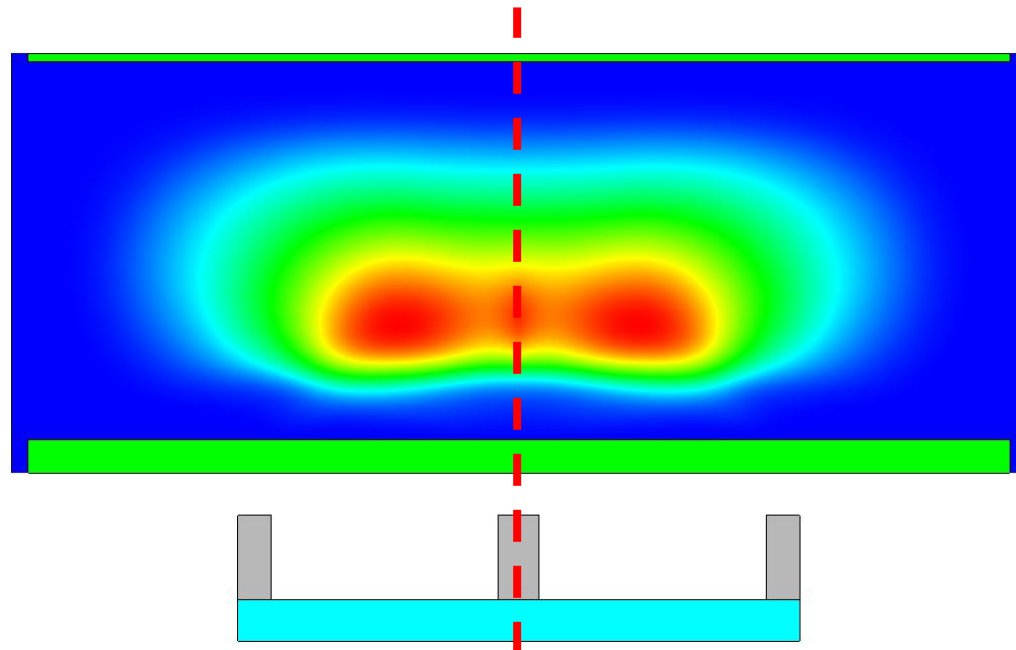


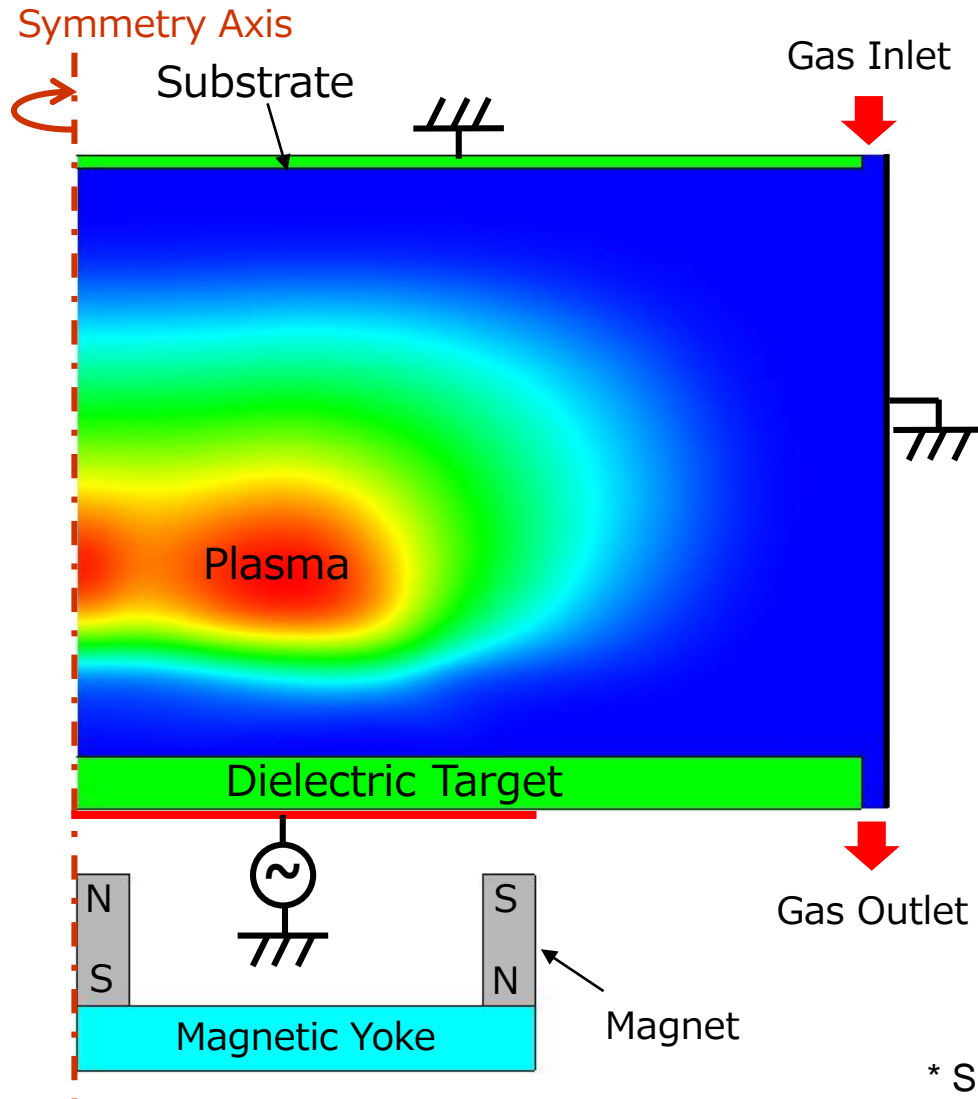
— CASE EXAMPLE —

# RF Magnetron Sputtering for Dielectric Target



# Model

## RF Magnetron Sputtering for Dielectric Target



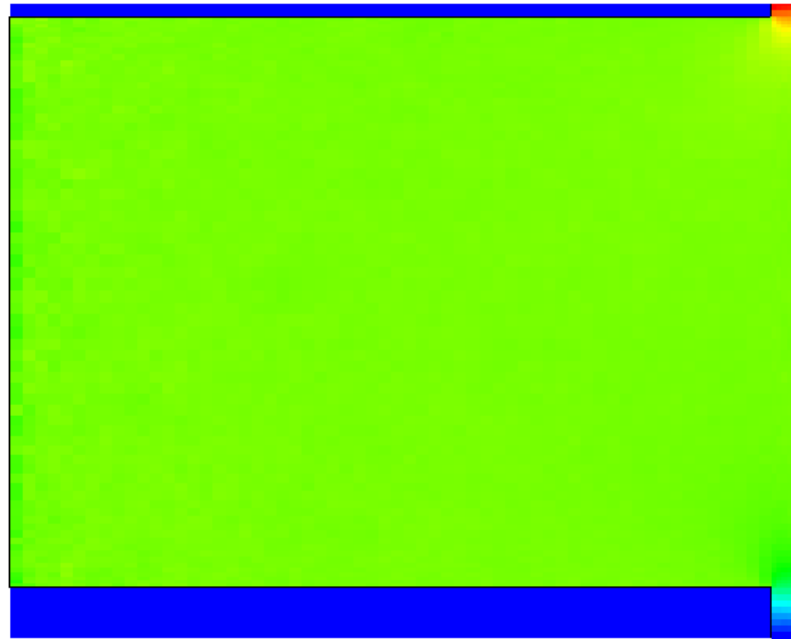
Axi-symmetric model

Gas Inlet		Ar 10 sccm
Gas Outlet		1.0 Pa
Magnet		Ferrite
Magnetic Yoke		Fe
Target	Material	Si
	Rel. Permittivity	11.9
	Voltage	Backside
	Waveform	<b>Sine Wave</b>
	Amplitude	<b>1 kV (P-P)</b>
	Frequency	<b>13.56 MHz</b>
	SEEC*	0.1
Target-Substrate Distance		45 mm

\* SEEC: Secondary Electron Emission Coefficient

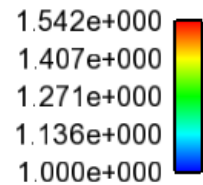
Ar Gas Density

Inlet : Ar 10 sccm

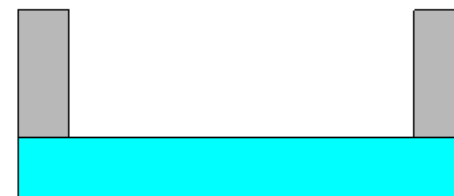
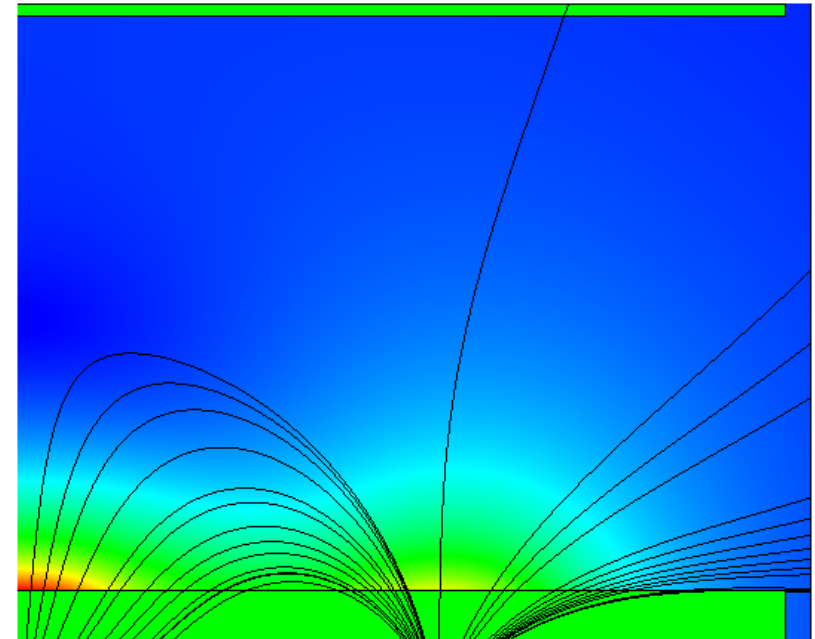


Outlet : 1.0 Pa

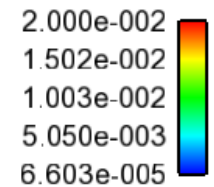
pressure\_Ar [Pa]



Magnetic Flux



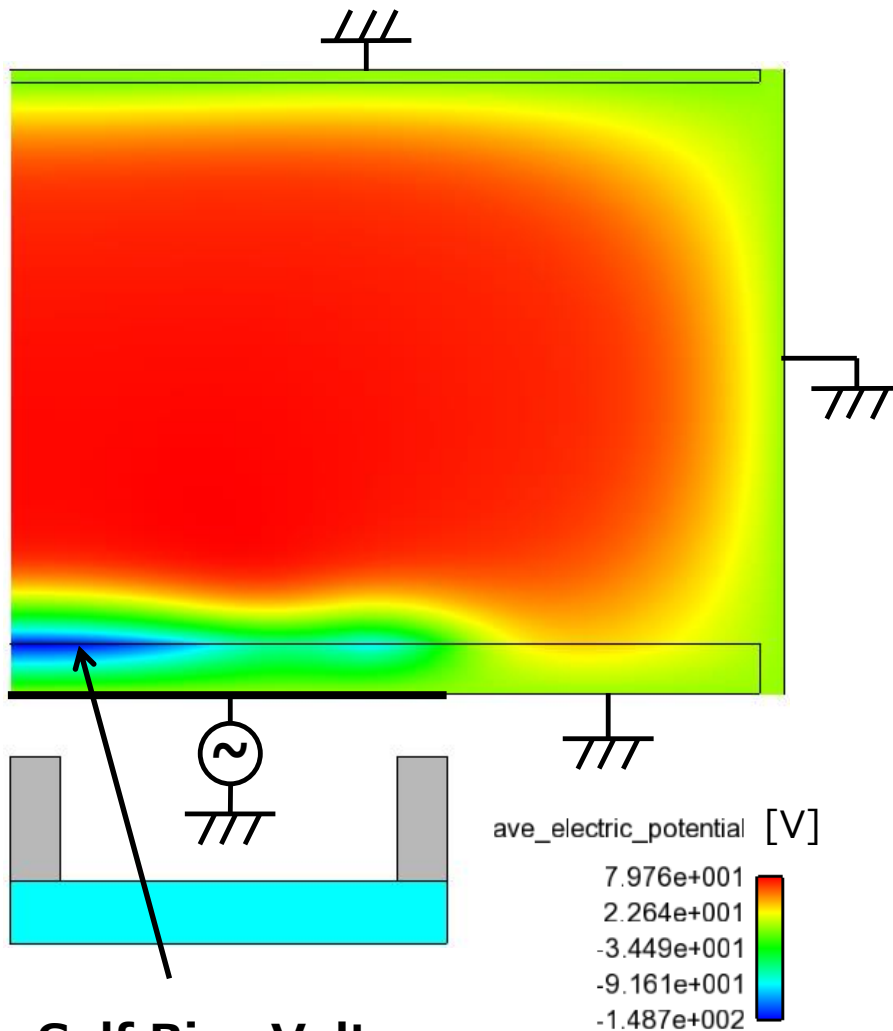
magnetic\_field [T]



# Voltage and Electron

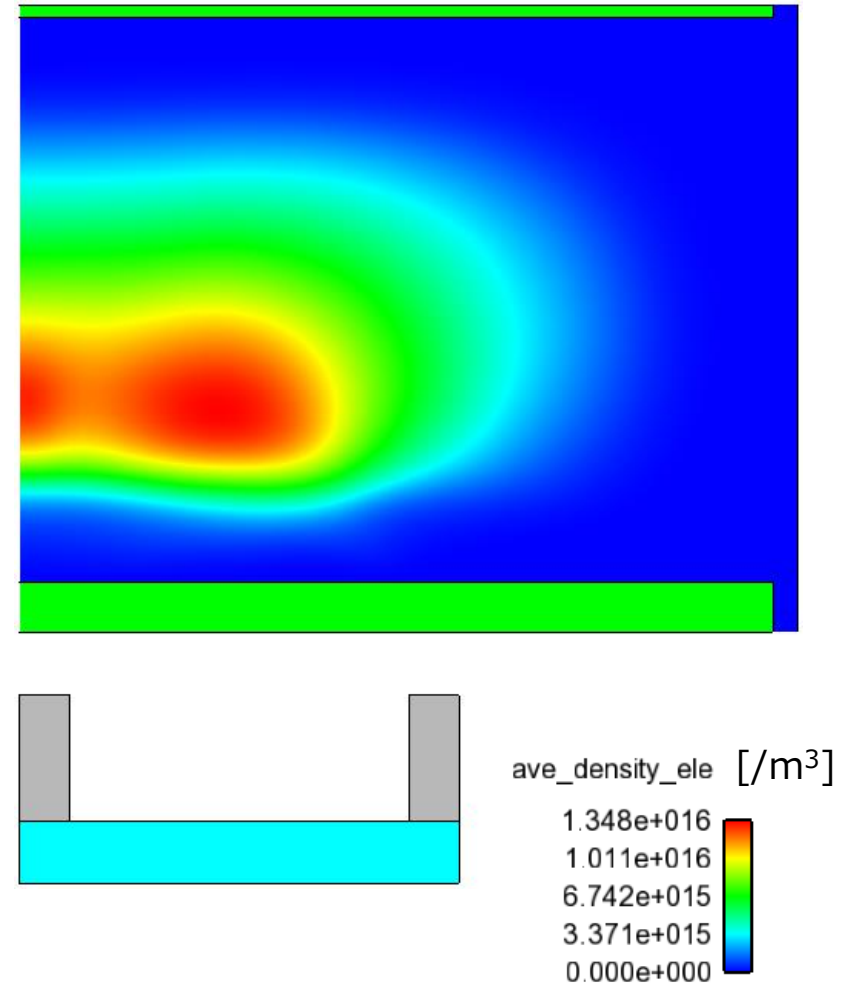
## RF Magnetron Sputtering for Dielectric Target

Voltage averaged over a period



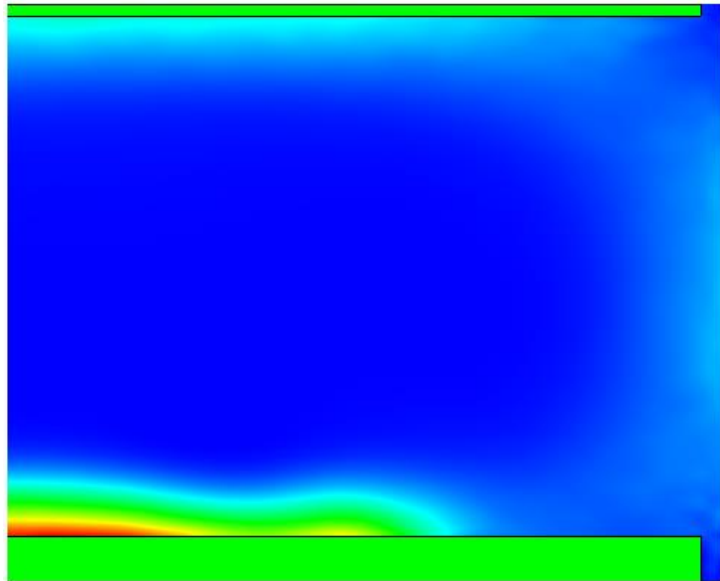
**Self Bias Voltage**

Electron Number Density averaged over a period

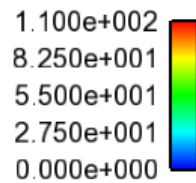


# Ion Energy

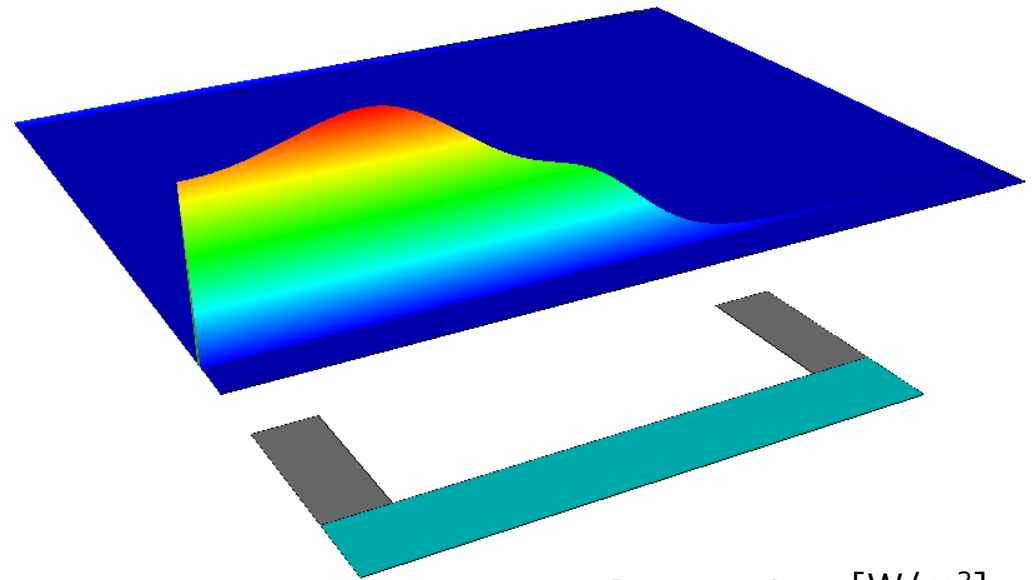
Ar<sup>+</sup> Ion Energy  
 averaged over a period  
 (per one particle)



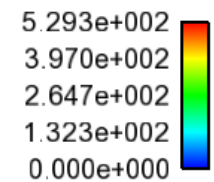
ave\_energy\_Ar\_p [eV]



Ar<sup>+</sup> Ion Incident Energy Flux  
 averaged over a period



ave\_flux\_energy\_Ar\_p [W/m<sup>2</sup>]

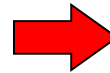
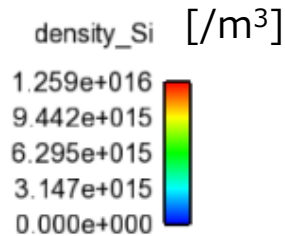
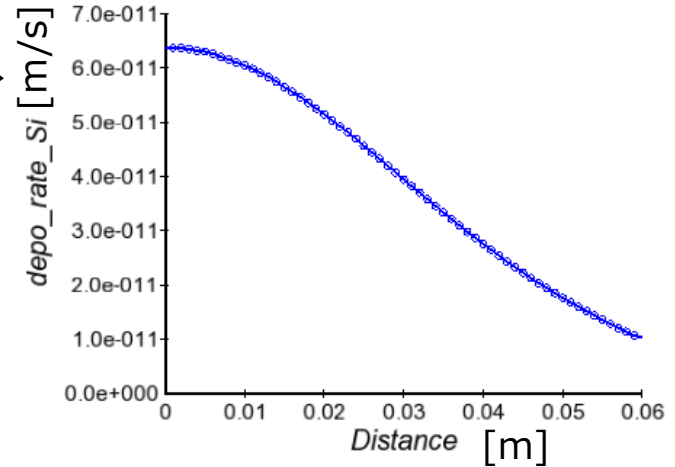
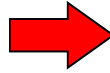
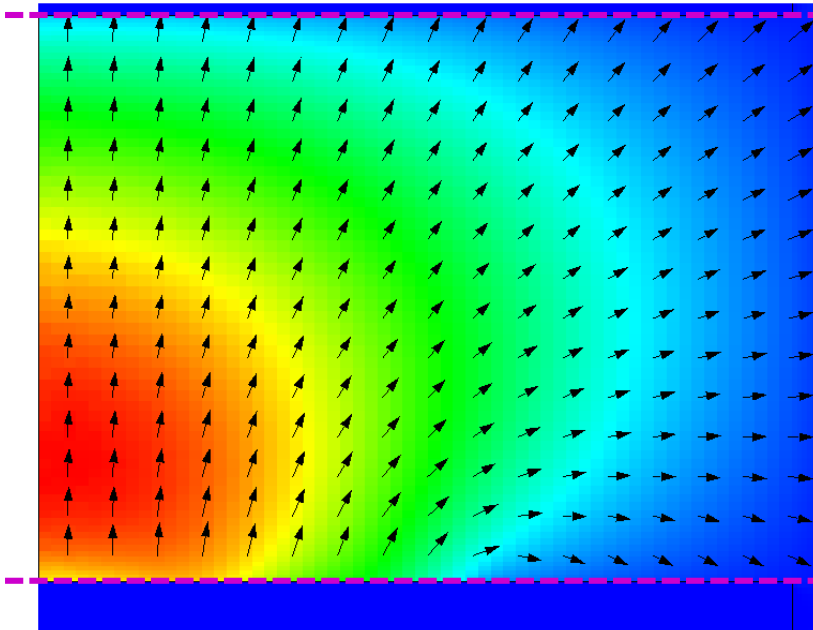


# Sputtering

## RF Magnetron Sputtering for Dielectric Target

Si Number Density (color) and Flow Velocity (arrow)

Deposition Rate on Substrate Surface



Erosion Rate on Target Surface

