The field of sputter deposition has gained an impetus due to its benefits such as higher adhesion, higher deposition rate, and uniform thickness over large substrates and better stoichiometric deposition as compared to the conventional PVD techniques. Different types of power sources are prevalent such as radio frequency (RF), direct current (DC) and pulsed DC voltage. Using the power supply in a pulsed mode prevents formation and increases the magnitude of target current as compared to the conventional DC magnetron sputtering, which results into higher electron density and also it does not allow rising of the target temperature.

Our work invites the idea of modeling and simulating the magnetron with the available experimental specifications. Simulations were carried out on a target using 2D Axisymmetric and 3D geometry on Comsol Multiphysics. The target was provided a negative bias of few hundred Volts and magnetic field around the target was generated by the coil configuration having current density of the order of few MA/m$^2$ along the direction of coil. We examined the magnetic and electric field distribution inside the magnetron from the simulation model which had a good match with the experimental results performed by passing suitable current to a magnetic coil configuration. Particle tracing plots for an electron and ion were generated which showed a trapping capability for the magnetron.