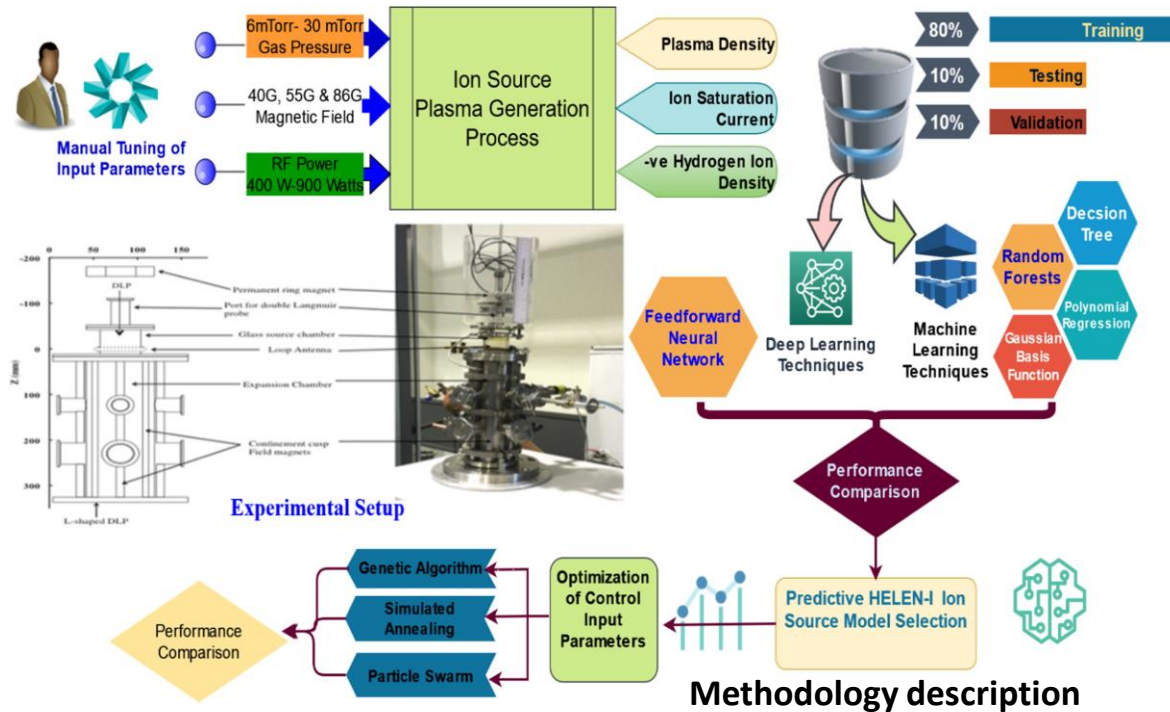# Optimization of input parameters of ANN–driven plasma source through nature-inspired evolutionary algorithms
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Experimental Setup

Methodology description

An ion source produces energetic ion streams of required energy and current for applications in diversified fields. Operating an ion source with repeatable performance remains challenging and time-consuming due to its nonlinear nature & complex relationship between the input & output parameters.

This study examines the efficacy of nature-inspired evolutionary algorithms (NIEAs), like particle swarm optimization (PSO) technique, simulated annealing (SA), & genetic algorithm (GA) for optimizing the input parameters (magnetic field, gas pressure, rf power) of a predictive time-dependent ion source model based on an artificial neural network (ANN), with a motivation to use on ion source operation in auto-pilot mode in future.