

## Supplementary data

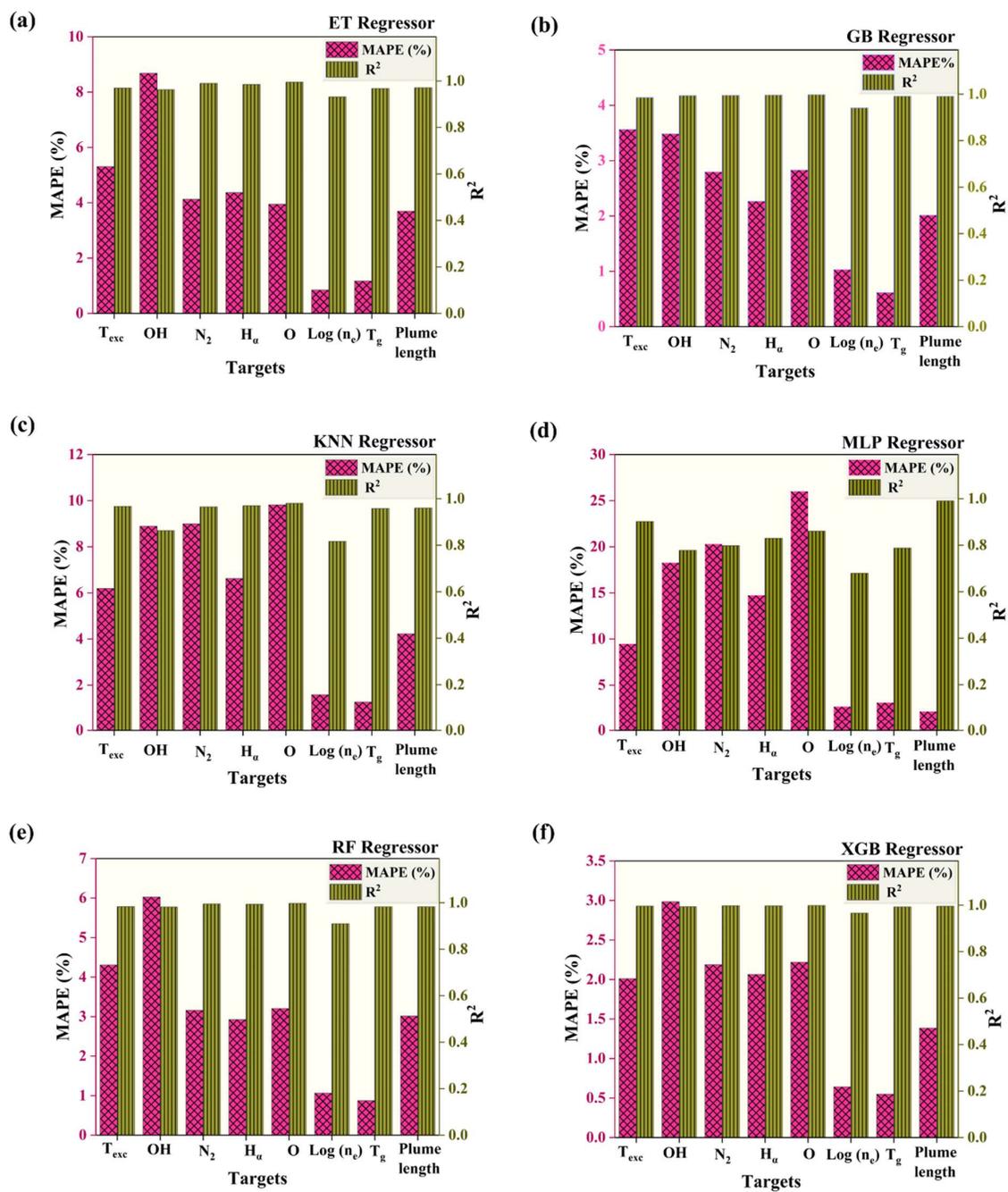
# Uncertainty-Aware Machine Learning-Based Prediction of Plasma Parameters in a Microwave Atmospheric Pressure Plasma Jet

Suryasunil Rath<sup>1</sup>, Priyabrata Das<sup>2</sup>, Pulak Mohan Pandey<sup>2</sup> and Satyananda Kar<sup>1\*</sup>

<sup>1</sup>*Department of Energy Science and Engineering, Indian Institute of Technology Delhi, Hauz  
Khas, New Delhi, 110016, India*

<sup>2</sup>*Department of Mechanical Engineering, Indian Institute of Technology Delhi, Hauz Khas,  
New Delhi, 110016, India*

*\*Corresponding author email: [satyananda@dese.iitd.ac.in](mailto:satyananda@dese.iitd.ac.in)*



**Figure S1:** The MAPE and  $R^2$  value for test set by using default (vanilla) (a) ET, (b) GB, (c) KNN, (d) MLP, (e) RF and (f) XGB regressor ML model

**Table ST-1: Hyperparameter values for the vanilla ML regression models**

ML model	Optimized hyperparameters
ET	n_estimators: 100, max_depth: 'none', min_sample_split: 2, min_sample_leaf: 2, bootstrap: 'False', criterion: 'squared_error'
GB	n_estimators: 100, learning_rate: 0.1, max_depth: 3, min_sample_split: 2, min_sample_leaf: 1, subsample: 1, loss: 'squared_error'
KNN	n_neighbors: 5, weights: 'uniform', distance function: 'minkowski', p: 2
MLP	hidden_layer_sizes: (100,), activation: 'relu', solver: 'adam', alpha: 1e-4, learning_rate_init: 0.001
RF	n_estimators: 100, max_depth: 'none', min_sample_split: 2, min_sample_leaf: 1, criterion: 'squared_error'
XGB	n_estimators: 100, learning_rate: 0.3, max_depth: 6, min_child_weight: 1, subsample: 1, colsample_bytree: 1