

Highlights

Extracting the iron concentration in silicon solar cells using photovoltaic parameters and machine learning

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- 80 ML models for iron quantification in silicon solar were tested
- XGB and DNN models outperform RF, GB, and SVR models
- MSE, MAPE, and R^2 reach up to 0.003, 3%, and 0.997 for synthetic data and 0.004, 9%, and 0.987 for experimental data
- Photovoltaic parameter variations due to FeB dissociation used as ML model inputs.