

Highlights

Iron's impact on silicon solar cell execution: comprehensive modeling across diverse scenarios

Oleg Olikh, Oleksii Zavhorodnii

- Iron defect transformation impact on Si solar cells was studied via SCAPS simulation
- Variations in I_{SC} , V_{OC} , and η due to FeB decay allow estimation of iron contamination
- Short-circuit current variation is a key iron impurity quantification metric
- PCA is advisable step for estimating iron concentration using photovoltaic parameters