SOLAR CELL RESEARCH DATA DIGITIZATION

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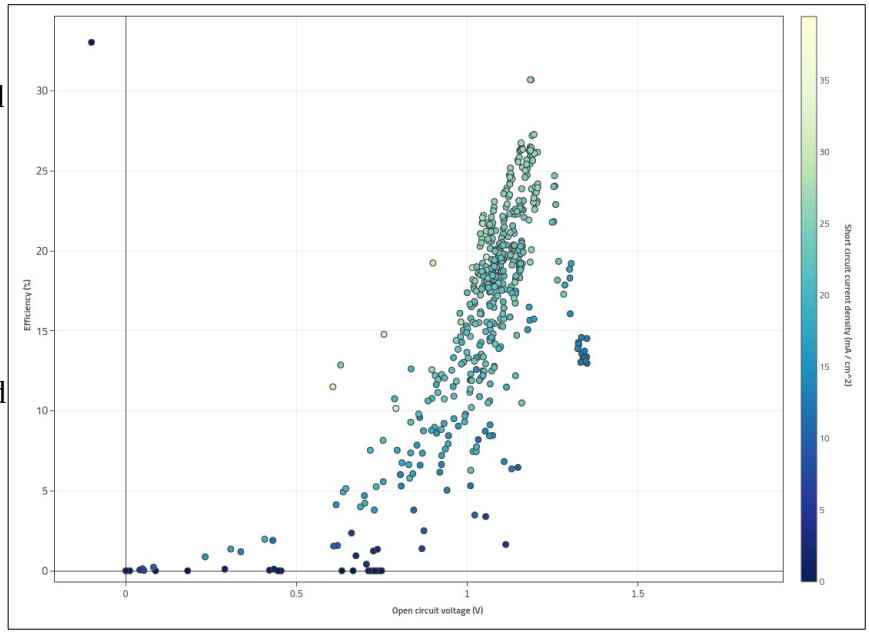
While FAIR data is essential for the long-term sustainability of science, researchers need practical incentives to engage with data stewardship. At HZB, the data steward team has collaborated closely with solar cell research groups to implement efficient and comprehensive data management workflows. This initiative is built on a strong partnership between data stewards and scientists, aiming to transform research outputs into FAIR-compliant datasets while providing field-specific analytical tools to support the exploration, visualization, and analysis of both individual and group-level data.

A key element of this effort is the collaboration with FAIRmat, a consortium within the German National Research Data Infrastructure (NFDI), which develops and maintains the NOMAD platform. NOMAD Oasis enables the creation of a customized NOMAD instance, allowing research teams to benefit from NOMAD's features while tailoring data management to their specific needs and institutional policies. Leveraging this scalable and interoperable framework, we have developed domain-specific schemas, ontologies and plugins for solar cell research. These enable the structured capture of data and metadata from laboratory processes and measurements.

The HZB NOMAD plugin has shown encouraging results: it is being adopted by an increasing number of research groups, including a large EU consortium project- PERSEUS, which focuses on printed perovskite solar cells for large-area applications. This work serves as a practical example of how data stewardship can be integrated into daily research activities to foster reproducibility, interoperability, and long-term value.



References
[1] Scheidgen et al., (2023). NOMAD: A distributed web-based platform for managing materials science research data. Journal of Open Source Software, 8(90), 5388, https://doi.org/10.21105/joss.05388

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