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Background

The 16th edition of the SOPHIA Workshop on PV-Module Reliability, jointly organized by the CEA (France) and the Fraunhofer Institute for Solar Energy Systems ISE (Germany), will take place on April 23–24, 2026, at the Institut National de l'Énergie Solaire, in Le Bourget-du-Lac, France.

Following the successful 2025 edition hosted by Technical University of Denmark (DTU Risø), the SOPHIA series continues to provide a high-level forum for experts from research institutes, industry, certification bodies, and academia to address the evolving challenges of photovoltaic (PV) modules and systems reliability.

In this context, a Special Issue of EPJ Photovoltaics will be dedicated to the main scientific and technological themes addressed during the workshop. Authors are invited to submit original contributions, as well as other high-quality papers aligned with the scope of the issue.

All manuscripts will undergo a rigorous peer-review process and will be published in **Open Access**.

Aims and Scope/Topics of the Special Issue

The global PV market is evolving rapidly, driven by new cell and module architectures, emerging applications, digitalization of system monitoring, and increasing demands related to climate resilience and grid integration. Ensuring long-term reliability across technologies and use cases is more critical than ever to secure investor confidence, reduce levelized cost of electricity (LCOE), and support the energy transition.

This Special Issue aims to gather state-of-the-art research contributions addressing **future-proof PV modules and systems**, with particular focus on:

- Understanding degradation mechanisms in emerging PV technologies
- Advancing reliability testing, certification, and standardization frameworks
- Leveraging digitalization, AI, and data analytics for predictive maintenance
- Addressing climate- and application-specific reliability challenges
- Evaluating reliability in medium-voltage and grid-scale applications

The issue seeks contributions spanning materials, devices, modules, and systems, bridging fundamental understanding and field performance.

Topics of Interest

Contributions may include, but are not limited to:

- **Performance Certification and Standards**
  - Reliability testing for new module architectures (e.g., tandem, HJT, IBC, TOPCon)
  - Adaptation of IEC standards to emerging technologies and certification challenges
  - Accelerated aging tests and correlation with field data
- **Data-Driven Reliability and Digitalization**
  - AI-based degradation modeling and diagnostics
  - Digital twins and advanced O&M strategies
  - Large-scale field data analytics from field monitoring
- **Climate- and Application-Specific Reliability**
  - PV performance and reliability in extreme climates (desert, tropical, alpine, maritime)
  - AgriPV, BIPV, floating PV, vehicle-integrated PV (VIPV) specific reliability

- Application-driven reliability requirements ; Mechanical loads, humidity, UV exposure, and thermal cycling impacts

🔆 **Reliability for Medium-Voltage and Grid-Scale Systems**

- High-voltage module concepts and their component-specific reliability
- System-level risks and mitigation strategies
- Long-term performance in large-scale installations

Interdisciplinary contributions linking technical reliability to sustainability, lifecycle assessment, and circularity are also welcome.

Submissions

Authors participating in the 16th SOPHIA Workshop—whether as invited speakers, poster presenters, or attendees—are particularly encouraged to submit extended versions of their contributions.
Independent submissions aligned with the scope are also welcome.
All papers will be carefully peer-reviewed by international experts.
Instructions for authors are available at:

https://www.epj-pv.org/author-information/instructions-for-authors
Manuscripts must be submitted online at:

https://epjpv.nestor-edp.org/

During submission, please select the Special Issue:
"'Future proof PV modules and systems: Reliability across technologies, applications, and digitalization, edited by Ioannis Tsanakas, Timea Bejat, Karl-Anders Weiss, Ingrid Hädrich"

Submission deadline: June 30th 2026

Article Processing Charges (APC)

EPJ Photovoltaics is a **fully Open Access journal**.
The Article Processing Charges (APC) will apply according to the journal's current policy. Authors affiliated with institutions covered by national open access agreements may benefit from full or partial APC coverage. Detailed information is available on the journal website.
There is no submission fee.

Waivers and Discounts

- EDP Sciences provides a waiver to authors based in countries included in Group A of the Research4Life programme

- EDP Sciences has signed an APC agreement with the NSLC (National Science Library CAS) the research library service system for the Chinese Academy of Sciences (CAS). Corresponding authors affiliated with one of the eligible CAS institutes, can publish in open access at a 20 percent discounted APC price.

- EDP Sciences has signed with the Technische Informationsbibliothek (TIB) a German National APC agreement. Corresponding authors affiliated with German academic institutions including universities and research institutions, can publish in open access at a 20 percent discounted APC price.

- Corresponding authors from French institutions having signed the National Open Access agreement in France, can publish in Open Access without any fee.

- Special fee for students: The journal will offer a reduction of 36% of the APC (448€ instead of 700€) within a limit of 15% of the total number of accepted papers.

About the Journal

EPJ Photovoltaics is an international peer-reviewed Open Access journal covering all aspects of photovoltaic science and technology, from fundamental materials research to systems and applications.
The journal is indexed in major international databases including Scopus, Web of Science (ESCI), ADS, CAS, and others.