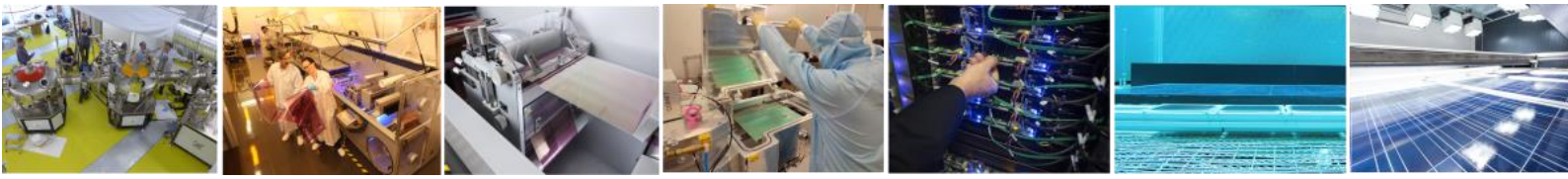

WELCOME ADDRESS

COORDINATOR' MESSAGE

Greetings VIPERLAB Community,

As we reflect on our recent third yearly meeting, we are both proud and inspired by the tremendous progress and achievements we have made over the past year. Our dedicated efforts in sharing VIPERLAB infrastructures and conducting joint research activities targeting harmonised procedures for fabrication, characterisation, and life cycle analysis, have created VIPERLAB as a recognisable brand in the perovskite community.

With just six months remaining in the VIPERLAB project, our focus is now on the dissemination and exploitation of the wealth of results we have accumulated over the past three years. We would like to highlight some upcoming events where VIPERLAB will be actively participating. These include the Quantsol and ISOPHOS summer schools, the VIPERLAB Public Event at EUPVSEC in Vienna, and the ISOS-15 conference in Berlin. These events offer unique opportunities to engage with leading experts, share knowledge, and discuss the future of perovskite PV technologies. Detailed information about these events can be found later in this newsletter.

Thank you for being an integral part of VIPERLAB's journey and success.

Stay connected for exciting updates!

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Last VIPERLAB calls in 2024

Do not miss this opportunity!

Are you interested in submitting a proposal for free access to our excellent and complimentary EU perovskite PV infrastructures?

Until August 2024 you still have the possibility to submit your proposal, take note! The upcoming and last call to foster perovskite PV development and testing in Europe to build a unified access service towards EU academic and industry researchers will open between **1st July and 31st August.**

Do not miss your chance to access the VIPERLAB infrastructures! They will be available from September to November 2024. Secure your spot now and take advantage of this exclusive opportunity.

Choose the facility, contact the instrument scientists and submit your application! Details on the call, including application procedures, are at www.viperlab-kep.eu.

Thank you for being an integral part of VIPERLAB's success!

Apply here!

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VIPERLAB INFRASTRUCTURES: SERIES OF WEBINARS

CRESCO Computing lab. Infrastructure

The CRESCO computing laboratory at ENEA features a family of Linux HPC (High Performance Computing) Clusters, forming a robust infrastructure for distributed computing. It provides a production-quality, service-oriented system designed for high-performance and high-throughput computing, boasting 1.4 PetaFlops, 434 computing nodes, and 20,000 cores.

Read more about the infrastructure here.

Watch the video

PSK & Si Tandem manufacturing lab

The ENEA TANDEM PSK/Si Manufacturing Lab, is one of the most significant PV research infrastructures in Southern Europe. This lab provides a complete chain from materials to device realisation and characterisation. Access to the infrastructure is available to external users, fostering scientific collaboration in the field of next-generation PV technologies.

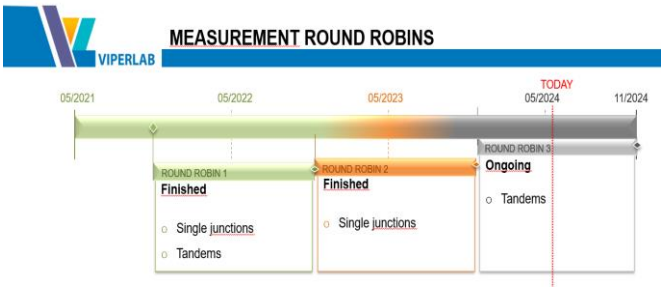
Read more about the infrastructure here.

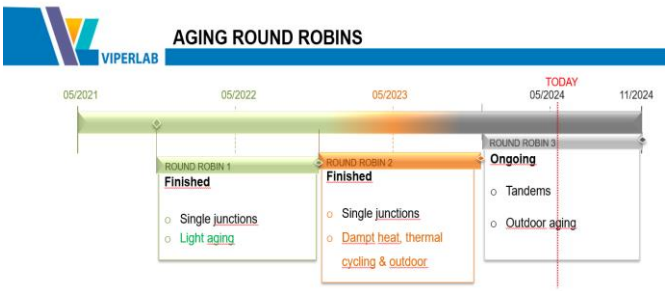
Watch the video

VIPERLAB ACTIVITIES

Round Robins are moving forward!

In the framework of the VIPERLAB project, four Round Robins have already been completed: two focused on measurement and two on aging. During these rounds various protocols and configurations were thoroughly evaluated. Additionally, at present two rounds are underway, one dedicated to measurement and the other to aging, specifically involving tandem PSK/Si solar cells.





The current measurement Round Robins involves a benchmarking study to compare different measurement protocols uses for tandem devices. Insights from the previous Round Robins can be summarised as follows:

Firstly, when comparing measurements taken before and after the samples were shipped to the measuring labs, it was detected that the short circuit current was influenced by these measurements. Additionally, the open circuit voltage was found to be slightly influenced. The mean value for the fill factor appeared to be stable, although silver paste had to be added to some of the substrates to maintain consistency. These findings highlight the importance of using stable cells and reducing waiting periods, ensuring consistent contacting procedures, performing EQE or using adapted spectral mismatch correction, controlling and monitoring temperature, and utilising appropriate spectral distribution for tandem cells.

Moreover, using larger cells can help avoid issues related to mask positioning. A shorter protocol to determine performance could potentially be sufficient to extract the necessary electrical parameters. It would be advantageous to exchange a reference cell, ideally a filtered silicon cell, to ensure that all laboratories operate with the correct irradiance settings. This would help standardise measurements and improve consistency across different labs.

As early as the results of the new measurement Round Robin are obtained, they will be disseminated for further discussion with the community.

UPCOMING EVENTS ON PV

SAVE THE DATE! Join us at the VIPERLAB Final Event at EUPVSEC!

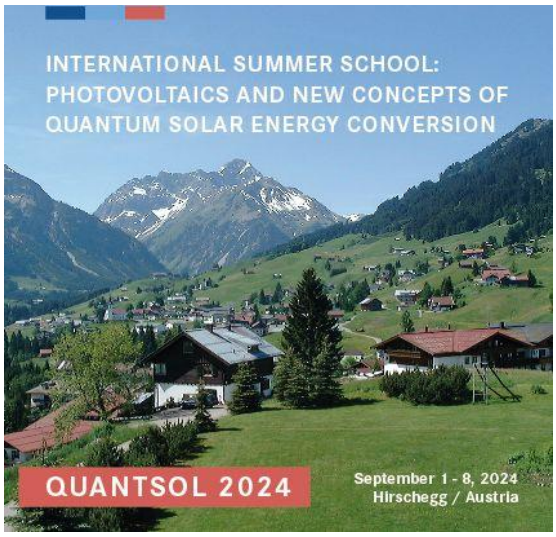
On September 23rd, the VIPERLAB project will hosts it Final Public Event at the European Photovoltaic Solar Energy Conference (EUPVSEC) '24 in Vienna: **'Unveiling the Future of Solar Energy with Perovskite PV'.** The event is organised by PNO Innovation Belgium in collaboration with the VIPERLAB partners.

Join us!

Leading experts discuss Perovskite-based Photovoltaic Research and Innovation in Europe, its recent successes and key future challenges. Join the event's open discussion about Europe's role in the emerging Perovskite-PV market!

Quantsol Summer School 2024

The upcoming **International Summer School on Photovoltaics and New Concepts of Quantum Solar Energy Conversion** will take place in Hirschegg (Austria) from 1st to 8th of September. Invited speakers, all recognised scientists from leading world institutions, will give lectures covering a wide range of topics on the fundamental principles of the conversion of solar energy into chemical and electrical energy as well as the physical and technical challenges.



Read more

International School on Hybrid and Organic Photovoltaics (ISOPHOS)

The 16th edition of the **ISOPHOS** will be held from the 3th till 7th of September 2024 in Talamone (Tuscany-Italy).

ISOPHOS is focused on recent advances in science and technology of organic and hybrid photovoltaic devices, including small molecules, polymers, perovskites, dye solar cells and the use of Graphene and other 2D materials for energy applications.

Register here!

International Summit on Organic and Hybrid Photovoltaics Stability (ISOS-14) in Berlin!

From 30th September to 2nd of October, HZB will be hosting the **15th edition of the International Summit on Organic and Hybrid Perovskite Solar Cell Stability (ISOS 15)** organised by the group of Helmholtz-Center Berlin and the Humboldt University.

The summit will tackle the topic of stability on its various levels from intrinsic stability of materials to methods how to properly protect devices from extrinsic degradation. But also discussing challenges like the metrology of ageing experiments as well as proper design of such experiments

Call for abstracts are still open until June 30th.

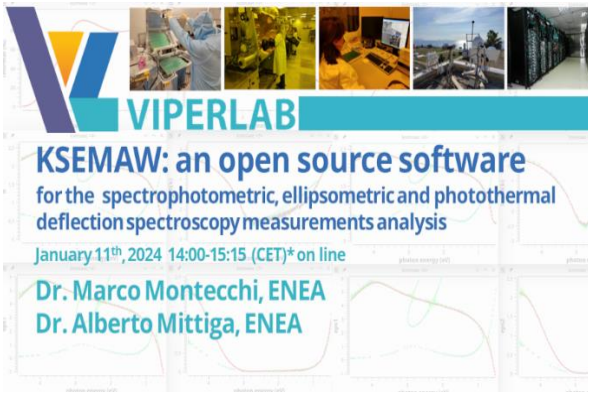
Read more

VIPERLAB'S EVENTS

Webinar to present the KSEMAW software

Experts from ENEA, Dr. Marco Montecchi and Dr. Alberto Mittiga, presented the KSEMAW software, a useful tool for scientists dealing with optical devices based optical coatings.

Particularly, the KSEMAW is a workspace for the analysis of Spectrophotometric (SP), Ellipsometric (ELI) and Photothermal Deflection Spectroscopy (PDS) measurements.



Interested in the results of the discussion?

Proceedings available!

VIPERLAB Webinar on Standardisation for Perovskite PV

The VIPERLAB webinar on **"Standardisation for Perovskite PV"** focused on Perovskite materials and devices.

v

Experts from international research institutes discussed the current activities of the IEC Technical Committees 113 and 82, ISOS and PSK-ISOS, as well as on standardisation activities regarding data ontologies and RDM.

Read the proceedings

VIPERLAB SHINING AT RELEVANT EVENTS!

HOPV 2024

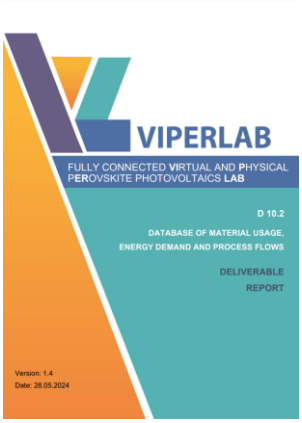
The **16th International Conference on Hybrid and Organic Photovoltaics** took place in Valencia (Spain) from 13th to 15th May 2024. The HOPV24 explored the cutting-edge advancements in hybrid and organic solar cells, including perovskite, organic, and other novel solar cells, as well as their integration into complementary photoelectrochemical systems.

Feray Ünlü, PhD at HZB presented a poster about greener ink based MAPI solar cells at HOPV 2024 Conference in Valencia (Spain).

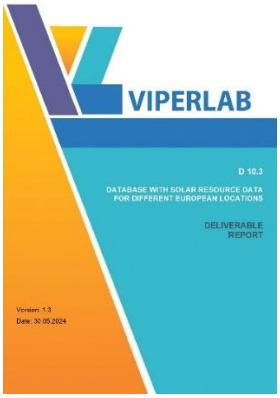
Dott.ssa Vera La Ferrara, from ENEA, had a talk on "Green Anisole as Antisolvent in Planar Triple-Cation Perovskite Solar Cells with Varying Cesium Concentrations" .

Ing. Manuela Ferrara, from ENEA, presented a poster on "Co-evaporation and hybrid approaches for fabrication of MAPbI3 for perovskite solar cells"

VIPERLAB PUBLIC REPORTS



D10.2 Database of material usage, energy demand and process flows



D10.3 Database with solar resource data for different European locations

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VIPERLAB Scientific Publications

- The challenge of studying perovskite solar cells'stability with machine learning (here)
- High-throughput aging system for parallel maxium Power Point tracking of Perovskite solar cells (here)
- Versatile implied open-circuit voltage imaging method and its application in monolithic tandem solar cells (here)
- Spatially resolved power conversion efficiency for perovksite solar cells via bias-dependent photoluminescence imaging (here)
- Stability follows efficency based on the analysis of a large perovskite solar cells ageing dataset (here)

. MEET THE CONSORTIUM

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JOIN THE VIPERLAB COMMUNITY:

KEP · VAPo

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