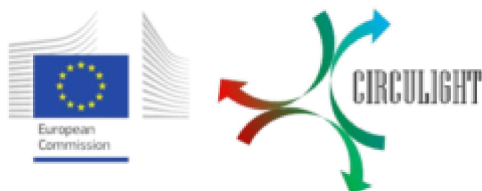


Editorial : this newsletter is published by the Circulight consortium on a biannual basis to inform you of the project's original scientific results and to popularize the underlying developed technology.



CIRCULATING LIGHT ON ANY PHOTONIC PLATFORM

This project has received funding from the European Union's Horizon Europe research and innovation programme under grant agreement No101129645

Happy New Year and welcome back!

As we begin this new year, we're pleased to share the latest updates from the project in our 4th newsletter edition. This issue features two interviews with our young researchers: one PhD student working on the design and fabrication of our devices, and another exploring the project's social-science dimensions. We also highlight recent advances in the characterization of the optical and magneto-optical properties of our materials, and conclude with an announcement for EMRS, where we will be hosting a symposium and welcoming inspiring speakers.

Characterizing Magneto-Optical Thin Films for Next-Gen Photonic Circulators

The knowledge of the **optical functions** (permittivity) of materials is an essential factor in the simulation of integrated photonic systems. The design of the developed magneto-bi-plasmonic circuit needs to take into account all the materials used. This includes not only typical plasmonic metals, but also buffer (adhesion) layers as well as capping layers. For the **CIRCULIGHT** project, the **spectroscopic Mueller matrix ellipsometer** operating in the wide spectral range from 190 nm to 1700 nm is used to characterize materials used in the design of the **circulator**. In addition, when the ellipsometer is extended with external magnetic circuit, it enables the measurement of **magneto-optical (MO) properties** of the developed and studied thin films based

employ numerical optimization methods and compare the results with experimental data, fitting the model accordingly.



Spectroscopic ellipsometer WOLLAM RC2-DI used for thin film characterization (left), rotating permanent magnet circuit for magneto-optical characterization (right).

Interdisciplinary Insights : A conversation with two of CIRCULIGHT's young researchers :

This month's CIRCULIGHT spotlight features conversations with two PhD researchers from *TU Eindhoven* whose work reflects the project's rich interdisciplinarity. **Larissa Cool**, working at the intersection of social sciences and high-tech innovation, spoke about the challenges and rewards of collaborating across fields: "Everyone has high expertise but very different ways of working and communicating. Sometimes it's difficult to understand one another, but that's part of the learning curve, especially as a PhD researcher." She emphasizes how essential it is to integrate social perspectives into a European research initiative of this scale: "Our role is to help teams think collaboratively and reflect on the broader impacts of what they're developing; not just ecological, but also social and economic." Her advice to peers is simple but powerful: "stay curious, ask questions, and be willing to step outside familiar boundaries."

From the technological side, **Saina Farrokhpour** offered insight into the project's core mission: developing chip-scale optical circulators, "a kind of traffic controller for light," as she describes them. "Current optical circulators are too bulky for chip fabrication. CIRCULIGHT aims to create a chip-scale version, a major step toward fully integrated optical systems." Such advances could significantly improve energy efficiency in data centers and communications networks while enabling progress in areas like quantum computing and biomedical imaging. Reflecting on the collaborative nature of the consortium, Saina highlights the motivation that comes

echoes Larissa's: "Be curious, open-minded, and communicate, because collaboration is the key."

CIRCULIGHT Consortium meets in Wuppertal, Germany; October 29-30th, 2025



We were thrilled to hold the CIRCULIGHT 18-month consortium meeting this week in Wuppertal, Germany!

A heartfelt thank you to our hosts, Bilal Gökce and Jan Lino Kricke from Bergische Universität Wuppertal (BUW), for organizing such a warm and welcoming meeting. Highlights included an inspiring tour of BUW's state-of-the-art laboratories and engaging discussions that strengthened our collaboration and shared vision for the project.

We're energized for the next phase of CIRCULIGHT as we continue pushing the boundaries of photonics together!

Join us at the E-MRS Spring Meeting 2026!



We're pleased to announce our upcoming **Symposium D: *Hybrid Integration and Multiphysics Nanomaterials for Photonic Devices and Circuits***, held **May 25-29, 2026 in Strasbourg, France in the framework of the EMRS Conference.**

The symposium will bring together leading researchers in materials science, photonics, and nanotechnology to explore next-generation photonic integrated circuits. Topics include hybrid and multiphysics material platforms, integrated nonreciprocal devices, nonlinear photonics, and novel integration techniques .

With sessions and presentations by leading groups from **Tokyo Institute of Technology, King's College London, TU/e, IMEC Ghent, UPSaclay/C2N, UPC,** and others, covering advances in hybrid integration, nonlinear and quantum photonics, magneto-optical devices, multiphysics material platforms, and emerging fabrication techniques.

Abstract deadline: January 21, 2026.

More details and full program:

<https://www.european-mrs.com/hybrid-integration-and-multiphysics-nanomaterials-photonic-devices-and-circuits-emrs>

With our best wishes for the season!
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