WELCOME TO PHOENIX

FOURTH NEWSLETTER

FERROELECTRIC PHOTONICS ENABLING NOVEL FUNCTIONALITIES AND ENHANCEDPERFORMANCE OF NEXT GENERATION PICS

Join us as we explore recent achievements, milestones, and a look ahead at upcoming initiatives in the PHOENIX project. Ferroelectric photonics continues to drive innovation across next-generation photonic integrated circuits (PICs).

PHOENIX at ECIO 2025: Cardiff University

The **PHOENIX project** was proud to be an official **exhibitor** at the **26th European Conference on Integrated Optics (ECIO 2025)**, held from **10–12 June 2025** at **Cardiff University**.

As one of Europe's leading events in photonic integration, ECIO 2025 offered a dynamic platform to present PHOENIX's latest advances in ferroelectric photonics and next-generation photonic integrated circuits (PICs).

EUROPEAN CONFERENCE ON INTEGRATED OPTICS

Representing the project, Valentín Polo from **PNO Innovation Spain** showcased our progress and connected with a broad community of experts and innovators.
The event was also a valuable opportunity to **network and build synergies with other EU-funded projects**, strengthening collaborations and aligning efforts toward common innovation goals in photonics, quantum, and neuromorphic technologies.

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This project has received funding from the European Union's Horizon Europe by the granting Authority "HADEA (European Health and Digital Executive Agency) under Grant Agreement No 101070690

Results and Outlook

Over the first **30 months**, we achieved significant technical milestones:

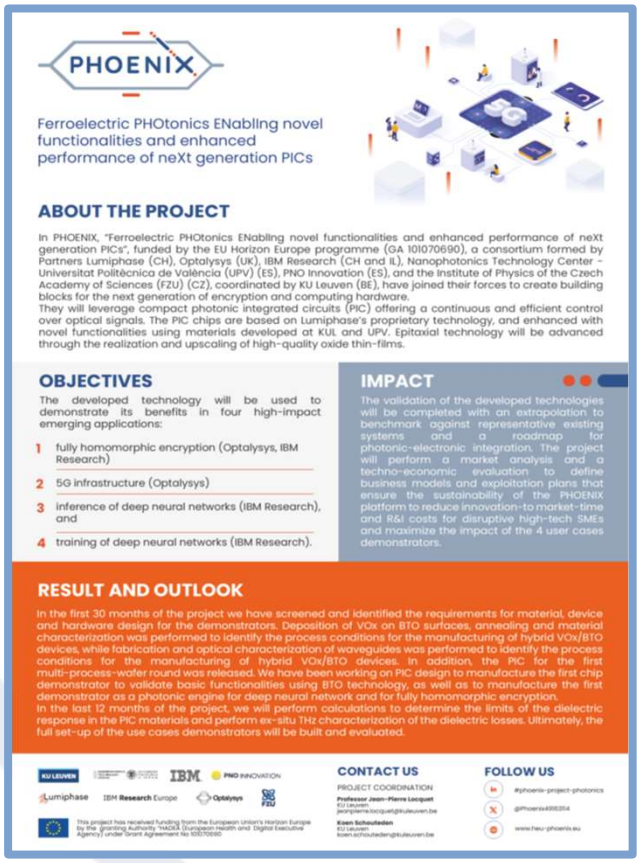
- **Materials and Device Development:** VOx deposition on BTO surfaces with optimized annealing and characterization.
- **Waveguide Fabrication:** Process optimization for hybrid VOx/BTO devices and development of VOx etching recipe
- **PIC Design:**Finalization of the multi-process wafer run for chip-level demonstrators.
- **Use Cases:** Designs targeting photonic engines for **deep neural networks** and **fully homomorphic encryption**.

In the remaining 12 months, we aim to:

- Perform dielectric response limit calculations.
- Conduct ex-situ **THz characterization** of dielectric losses.
- Finalize and evaluate use case demonstrators and hybrid VOx/BTO devices.

New Promotional Material

- We launched a fresh suite of PHOENIX promotional resources, revealed at ECIO 2025! These materials outline the project's mission, partners, and technological objectives. Ideal for presentations, outreach, and stakeholders. **Download Now !**



Achievements and Future Plans

In the past months, PHOENIX has:

- ❑ Published new results on photonic neural networks.
- ❑ Demonstrated hybrid PIC components.
- ❑ Strengthened international collaboration.

Looking forward:

- ❑ We aim to extend applications to AI acceleration and encrypted photonic computing.

DISSEMINATION & EXPLOITATION

Our communication team has amplified PHOENIX's visibility via web and social media. Here are some recent activities:

[Photonics21 Innovation Award 2025 – A Unique Opportunity for Photonics Innovators]

[Celebrating the International Day of Women and Girls in Science]

[New Publication: Advancing Photonic Neural Networks]

[PHOENIX , Exhibitor at ECIO 2025!]

[Celebrating World Quantum Day from the PHOENIX Project!]

[Celebrating the International Day of Light 2025]

[PHOENIX Contributes to Shaping the Future of Photonics at the Photonics Partnership Annual Meeting 2025]

[PHOENIX at ECIO 2025 – Cardiff Highlights]

Meet new PHOENIX partner FZU!

FZU Institute of Physics of the Czech Academy of Sciences

We welcome **FZU (Institute of Physics of the Czech Academy of Sciences)** as a new PHOENIX partner! Based in Czechia, FZU brings:

- Expertise in **ferroelectric films and dielectric materials**.
- Advanced **thin film modeling** for BTO-based PICs.
- High-precision measurements that strengthen the scientific foundation of our use cases.

READ MORE →

"Our expertise in ferroelectric films will enrich the PHOENIX consortium's capabilities and help pave the way for innovation in PIC-based encryption and AI." – FZU Team

Stay Connected!

www.heu-phoenix.eu

#phoenix-project-photonics

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