MATEL

PZT AND GRAPHENE MATERIALS INNOVATIONS FOR ADVANCED OPTO-ELECTRONIC APPLICATIONS IN AR AND BIOSENSING

MatEl builds upon advanced materials and beyond the state-of-the-art digital processing technologies to enable new integration schemes fostering the wide adoption of hybrid OEICs (optoelectronic integrated circuits) to industrial and biomedical applications.

"MatEl" introduces a **novel, on-chip integration scheme** enabling accurate and **fast alignment and bonding** of any type of chip package on Si3N4. MatEl will combine **laser transfer and laser soldering** to demonstrate hybrid platforms, which will be enhanced by the **monolithic integration** of advanced materials – **graphene and high-quality PZT**.

MatEl's innovative solution for selected applications highlights the universal character of the project's vision.

- **AR display** featuring a 2D light source for light-field with on-chip RGB lasers and OEIC-based demultiplexer.
- **Bio-photonic sensors** for reliable and low-cost detection of Covid-19 featuring integrated on-chip VCSEL at 850 nm and Graphene-based photodetector.

Co-funded by the European Union

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PROJECT DATA

Call:	HORIZON-CL4-2022-RESILIENCE-01
Type of Action:	Research and Innovation Action (RIA)
Start Date:	01/01/2023
Duration:	42 months
Total Cost/EU Funding:	€3.2M

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