



FIT-4-NMP

Strategic and targeted support
to incentivise talented newcomers
to NMP projects under Horizon Europe

HIGH-PERFORMANCE and SUSTAINABLE COMPOSITES INNOVATION WORKSHOP TU DRESDEN 13-14.10.2022

*Apel Laser
Radu Udrea
Romania*



This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 958255

HIGH-PERFORMANCE AND SUSTAINABLE COMPOSITES INNOVATION WORKSHOP TU DRESDEN 13-14.10.2022

- Established in 2003
- Key player on the local market for distribution, development integration of laser systems
- Long-term involvement in National and EU funded research projects
- Now part of the 'STOP' consortium, funded through HORIZON-CL4-2021-RESILIENCE-01 – concerned with surface nanostructuring of materials, using femtosecond lasers



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HORIZON-CL4-2023-TWIN-TRANSITION-01-31:

ENERGY EFFICIENCY BREAKTHROUGHS IN THE PROCESS INDUSTRIES
(PROCESSES4PLANET PARTNERSHIP) (RIA)

My key idea for contribution to a project under this topic

Memristive devices - > Metal-Insulator-Metal configuration;

- **Does not require transfer of information from memory to logic components within an electronic circuit**
- **Possible solution to data processing speed bottleneck**
- **Reduces heat waste in electronics by more than 50% - significant losses on data transfer**

Competences relevant to the topic and motivation to apply

- **Thin film deposition technique – magnetron & PLD through academic partnerships**
- **Electronic circuitry**
- **Electronic measurements**
- **Part of a PhD thesis within the company**



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HORIZON-CL4-2024-RESILIENCE-01-24:

DEVELOPMENT OF SAFE AND SUSTAINABLE BY DESIGN ALTERNATIVES (IA)

My key idea for contribution to a project under this topic

Hybrid laser cleaning & welding system

- Procedure replaces environmentally-harmful methods for cleaning such as sand blasting, chemical cleaning
- Laser welding is less energy consuming than conventional welding methods
- Requires adaptation to allow a 2-beam configuration

Competences relevant to the topic and motivation to apply

- Completed research project on laser cleaning
- Expertise in laser welding: installing & integrating several industrial laser welding systems
- Could be easily included in the company's business strategy & prove successful given the current relationships with the industrial sector



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HORIZON-CL4-2023-TWIN-TRANSITION-01-31 HORIZON-CL4-2024-RESILIENCE-01-24 RELEVANT EQUIPMENT AND FACILITIES

- Magnetron Sputtering deposition system
- Atomic Force Microscope (Nanosurf)
- Short pulse laser marking systems (various powers: 20W, 100W; different wavelengths)
- Ultra-short (fs) pulse laser surface structuring system (acquisition open, Light Conversion)
- 3D printing facilities: bioprinter, resin polymer 3D printer, filament 3D printer
- Other laser sources & optics



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