Innovative Optical/Quasioptical Technologies and Nano Engineering of Anisotropic Materials for Creating Active Cells with Substantially Improved Energy Efficiency

Fact Sheet

Project Information

IMAGE

Grant agreement ID: 778156

Funded under H2020-EU.1.3.3.

Project website

Overall budget € 1 692 000

Status Ongoing project

EU contribution € 1 692 000

Start date 1 February 2018

End date 31 January 2022

Coordinated by NACIONALNIJ UNIVERSITET LVIVSKA POLITEHNIKA Ukraine

Objective

The principal goal of the project is to combine research expertise in optics, crystallography and material science with efforts in material engineering to go beyond state-of-the-art in the development of highly efficient energy saving optical cells based on electro-, acousto- and nonlinear optical effects and designed to operate in optical and quasi-optical (sub-THz) ranges.

The idea of the project arises from recent advances in nano engineering combined with our technology for optimization of effects in anisotropic materials. We aim to benefit from enhanced anisotropic features, considering both materials with natural anisotropy and those with created and/or tailored anisotropy. Background will be developed by calculating parametric effects tensors for selected crystalline materials.
developed by calculating parametric effects tensors for selected crystalline materials. Then, two routes to create samples characterized by the highest figures of merit will be implemented. 3D anisotropy analysis approach will be used for finding global extremes of effects under study and will provide technical information needed to manufacture novel nanocomposites with tailored anisotropy. Nanoengineering approach will be based on growing of nanocrystallites along preferable directions and incorporating them into porous host medium. It is expected to achieve considerable improvements of the operating energy characteristics for bulk and nanocomposite materials.

It is planned to reach the proof of concept stage for the optical cells with improved performance and compare their characteristics to those, available on the market. Measures will be undertaken for developing the concept into innovative products. The research will be linked to the large-scale training program for the Seconded Staff Members with specific individual objectives. Based on synergies between all participating organizations and networking activities we expect to increase Europe's attractiveness and competitiveness as leading destination for R&I, particularly in optic/nanoengineering research niche.

Field of science

/social sciences/economics and business/business and management/commerce
/natural sciences/physical sciences/optics
/natural sciences/earth and related environmental sciences/geology/mineralogy/crystallography
/engineering and technology/materials engineering/nanocomposites
/engineering and technology/environmental engineering/waste management/energy efficiency

Programme(s)

Topic(s)

Call for proposal

H2020-MSCA-RISE-2017

Funding Scheme

MSCA-RISE - Marie Skłodowska-Curie Research and Innovation Staff Exchange (RISE)

Coordinator
Participants (8)

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<table>
<thead>
<tr>
<th>Organisation Name</th>
<th>Country</th>
<th>EU Contribution</th>
<th>Address</th>
<th>Activity Type</th>
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<tr>
<td>UNIVERSITE D'ANGERS</td>
<td>France</td>
<td>€ 157,500</td>
<td>Rue De Rennes 40 49035 Angers Cedex 01</td>
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<td>POLITECHNIKA WARSZAWSKA</td>
<td>Poland</td>
<td>€ 139,500</td>
<td>Plac Politechniki 1 00 661 Warszawa</td>
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<tr>
<td>PRIVATE ENTERPRISE SOFTPARTNERS</td>
<td>Ukraine</td>
<td>€ 216,000</td>
<td>Y. Konovaltsja Street, Building 97, Apartment 23 79057 Lviv</td>
<td>Private for-profit entities (excluding Higher or Secondary Education Establishments)</td>
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<tr>
<td>FORSCHUNGSZENTRUM JULICH GMBH</td>
<td>Germany</td>
<td>€ 99,000</td>
<td>Wilhelm Johnen Strasse 52428 Julich</td>
<td>Research Organisations</td>
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ENERGIA OZE SPOLKA Z OGRANICZONA ODPOWIEDZIALNOSCIA

Poland

EU contribution
€ 184 500

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Activity type
Private for-profit entities
(excluding Higher or Secondary Education Establishments)

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