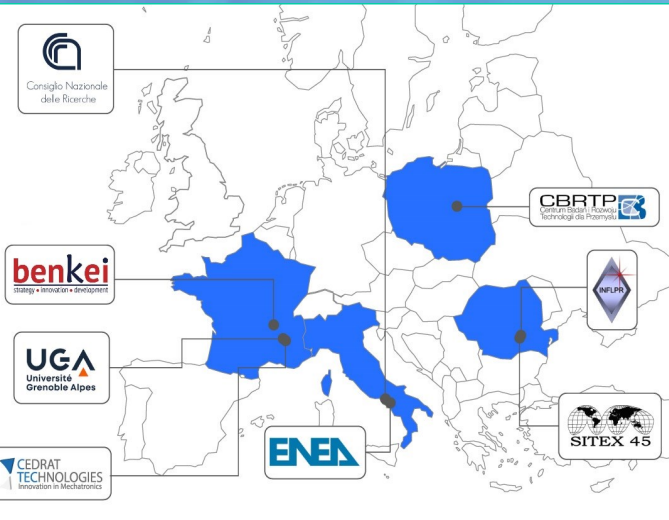


The Consortium



The main objective of this project is to realize components and devices with different industrial goals. The project targets a novel and ambitious science and technological breakthrough as a first proof of concept in the new field of photo-activated piezoelectricity.

3 systems to be produced:

- Opto-switch and Opto-valve Systems
- Reconfigurable Optics Systems
- Photoenergy Harvesting Systems



The project in brief



8 partners

4 European countries



3 years project

2.9 M€ budget



PULSE-COM

Photo-Piezo-ActUators based on Light Sensitive COMposite

Project Coordinator
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01/12/2019 to 30/06/2023

This project has received funding from the European Union's 2020 research and innovation programme under H2020-FETOPEN-2018-2019-2020-01 Call and grant agreement N°863227



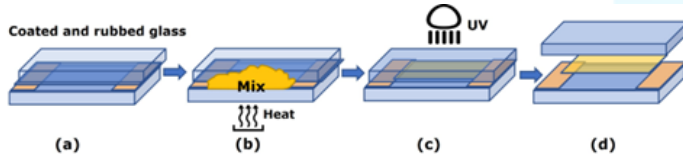
<https://www.pulsecom-h2020.eu/>

<https://www.linkedin.com/company/pulse-com-project>

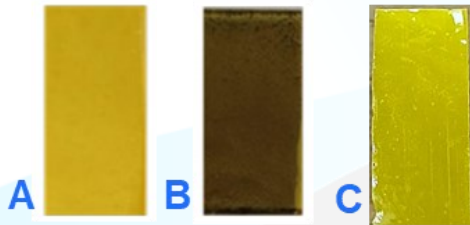
PULSE-COM

Photo-Piezo-ActUators based on Light Sensitive COmposite

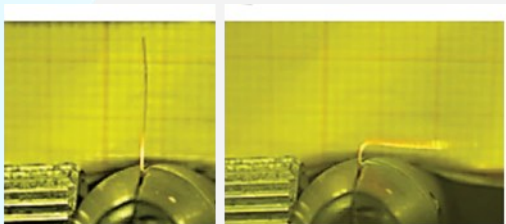
The present project seeks to create a novel class of photo-deformable polymer layer for photo-induced piezo-electric devices devoted to sensing and/or actuating applications.



Steps for PMPs fabrication: (a) Two coated and rubbed glass slides were glued to form the cell reactor; (b) Injection of LCs mixture; (c) UV polymerisation phase with a lamp; (d) Final polymerized film can be peeled and collected



Photos of A) azo-LC-PMP, B) Azo-LC-PMP/CB, C) azo-LC-PMP/Zinc oxide films prepared. Doped films (B+C) are useful to enlarge the absorption spectrum and increase efficiency.

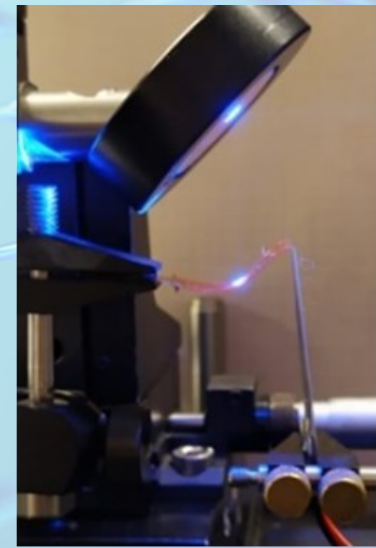
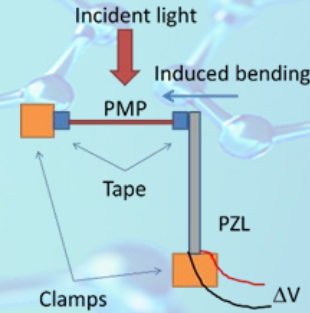


Zinc oxide doped PMP response under laser excitation

The PULSE-COM aim

The aim of the PULSE-COM project is to realize a new type of piezoelectric devices (PZL) controlled by light using low-cost photomobile films (PMP) whose movement is induced and controlled by sunlight and/or artificial light. PULSE-COM aims to create a new class of photoactivable devices that that will change the field of optoelectronic and piezoelectronic devices by creating innovative devices for a wide range of applications.

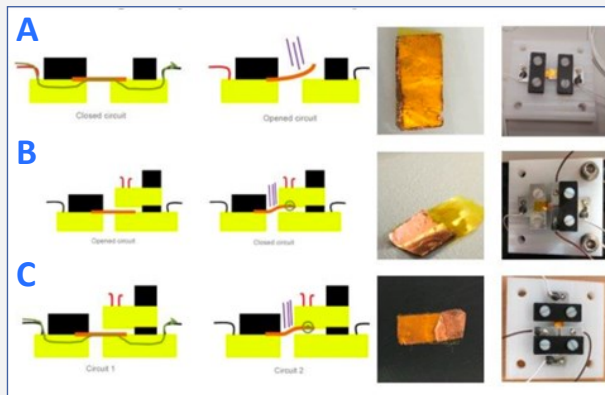
In particular, we intend to develop optical switches and innovative mechanisms, whose deformation can be easily controlled by the intensity of an incident light.



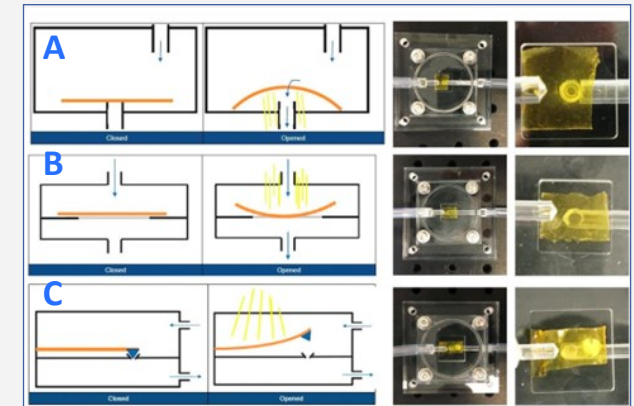
PMP-PZL devices will be the core of completely new light energy systems.

Prototypes structures of the PULSE-COM project

The main objective of this project is to realize components and devices with different industrial goals. Fully developed prototypes were realized for optical switches, opto-valves and optical deflector.



A) Normally closed switch; B) Normally open switch; C) Selector switch



A, B and C are the three different configuration for the optical valves.

The **Opto-switch** would be used to open and close an electric circuit when light is switched from ON to OFF (or inversely). The **Opto-valve** would be able to open and close a fluid circuit when light is switched from ON to OFF (or inversely) without embedded electric power. The **Optical deflector** would be able to change the orientation of an optical beam, depending on the amount of optical power received from the driving light.