

PHOTO-PIEZO-ACTUATORS BASED ON LIGHT SENSITIVE COMPOSITE



OBJECTIVES

The aim of [PULSE-COM project](#) is to combine photo-mobile polymers (PMP) and lead-free piezo-composite (PZL), to develop and to integrate a new class of Photo-Piezo-Actuators.



Fig. 1: Kick-off meeting in ISASI-CNR

WHY PULSE-COM?

The results of the PULSE-COM projects can address various needs in different areas such as biomedical, telecommunications, instrumentation, nanoengineering. The consortium aims at developing a new class of light-driven actuators, such as opto-switches and opto-microvalves, Reconfigurable Optics and Photoenergy Harvesting Systems.

TECHNICAL PRINCIPLE

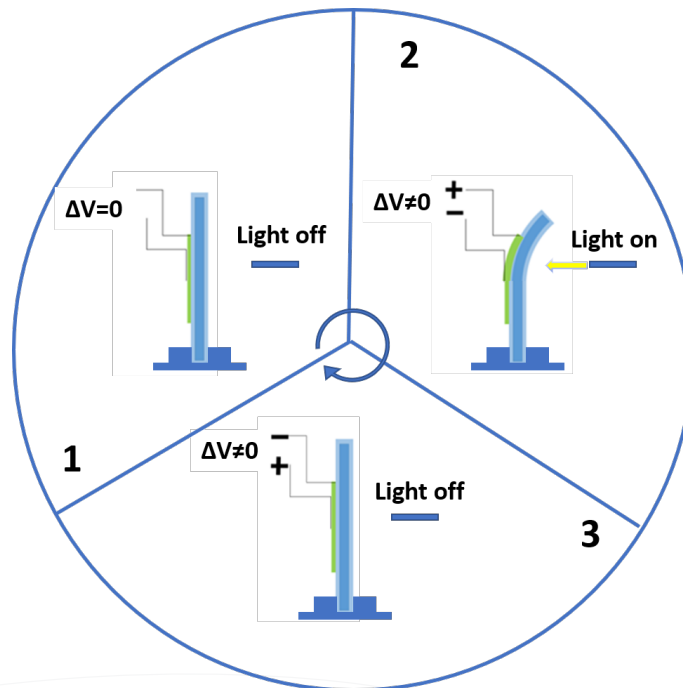


Fig. 2: Principle of a PMP-PZL based device

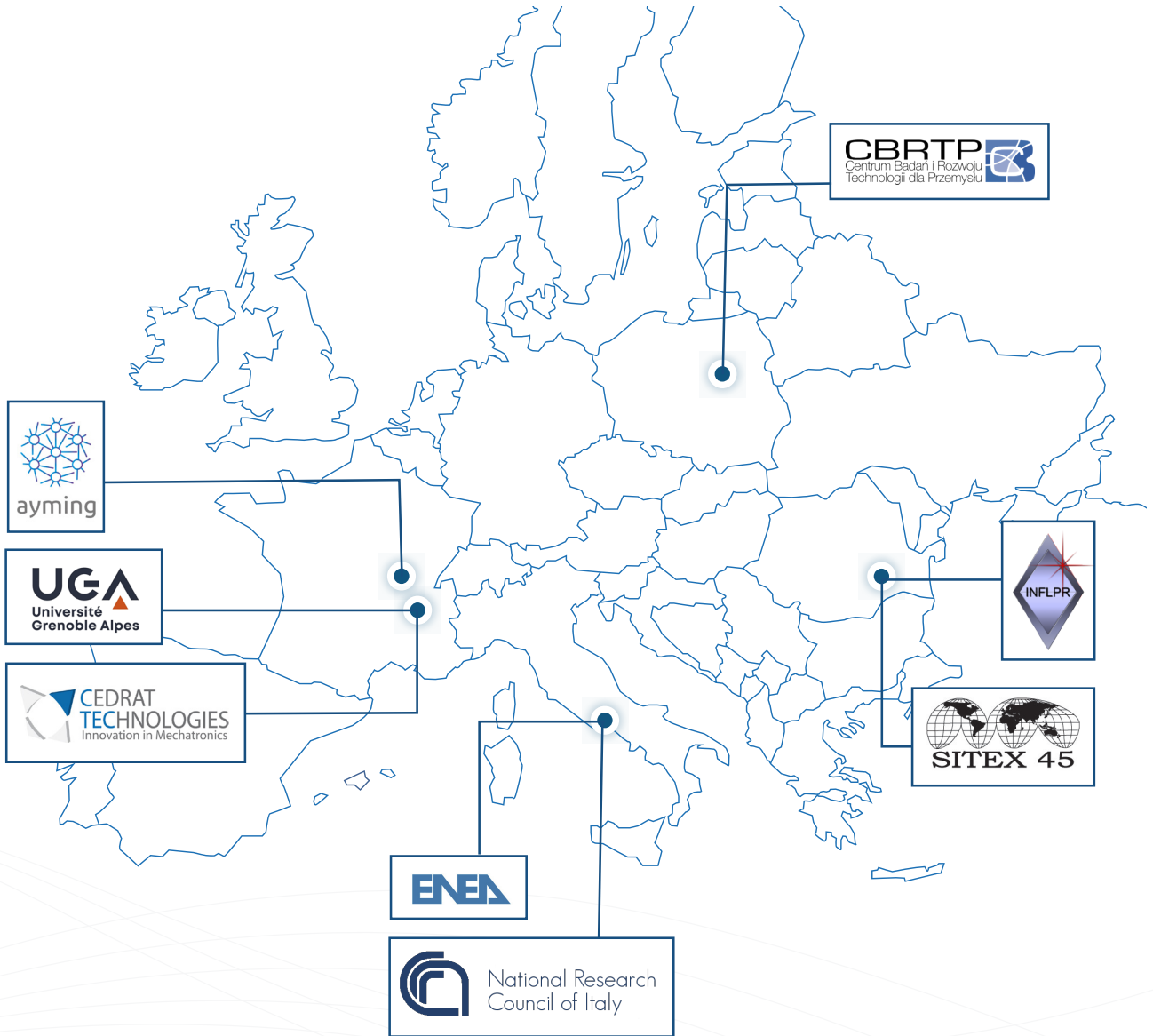
- 1.** The device is made of two parts: the substrate (PMP) which is a material sensible to the light, leading to Micro-Actuation functions, and a piezoelectric composite layer (PZT) leading to Sensing functions;
- 2.** Light induces movement to the photomobile substrate and the piezoelectric layer generates an electrical signal because of the mechanical induced strain with the appearance of electrical potential difference between the device electrodes.
- 3.** A reverse electrical signal is generated by the PZL layer when the light is off and the substrate returns to its initial position.



This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 863227.

PARTNERS

The PULSE-COM consortium is made of 8 partners, from 4 European countries. CNR is the coordinator, with the support of AYMING for administrative and financial coordination, dissemination, and exploitation of project results. CEDRAT TECHNOLOGIES will be involved in PMP and PZL characterization and will design and test two micro machines: an opto-switch and an optical micro-valve starting from the PMP-PZL materials prepared by partners.



This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 863227.