

## **Photopolymers and photoinduced processes: their innovation through esperanto european doctoral network**

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Photopolymers are an interesting family of polymers obtained by photoinduced processes that are more sustainable than thermal processes, as they need much lower energy, do not use solvents, are faster and more efficient. At present photopolymerisation is a key enabling technology for many industrial segments, e.g., coatings, printing inks, packaging, wood finishing, and electronics. New sectors can leverage photopolymerisation, e.g., growing industries like 3D printing and other end-user industries such as in the medical sector. Also small enterprises can easily and advantageously uptake this technology, as the intrinsic features of photoinduced reactions and the simple setup of the plants help reducing waste, raising energy efficiency and improving production processes. Although the photoinduced polymerisation technology is greener than most chemical processes, it still presents sustainability issues, namely the use of fossil-based raw materials, the migration of components during the service life of the product (limiting their use in medical and food applications), the need of harmful UV lights; moreover, it has limited applicability to thick/opaque samples or non-illuminated areas. Furthermore, photopolymers are mostly crosslinked, thus non-recyclable.

The present communication offers an overview on photopolymers and photoinduced processes and presents the Doctoral Network ESPERANTO (Enhancing the Sustainability of PhotopolymERs ANd phoToinduced prOcesses) supported by EU through a MSCA action: in the next three years the project aims at improving the sustainability of this technology and expanding its application tackling the technical and environmental issues of photopolymerisation, developing greener and safer materials for present processes and investigating innovative photopolymerisation processes.