3D-PRINTED EOSIN Y-BASED HETEROGENEOUS PHOTOCATALYST FOR ORGANIC REACTIONS

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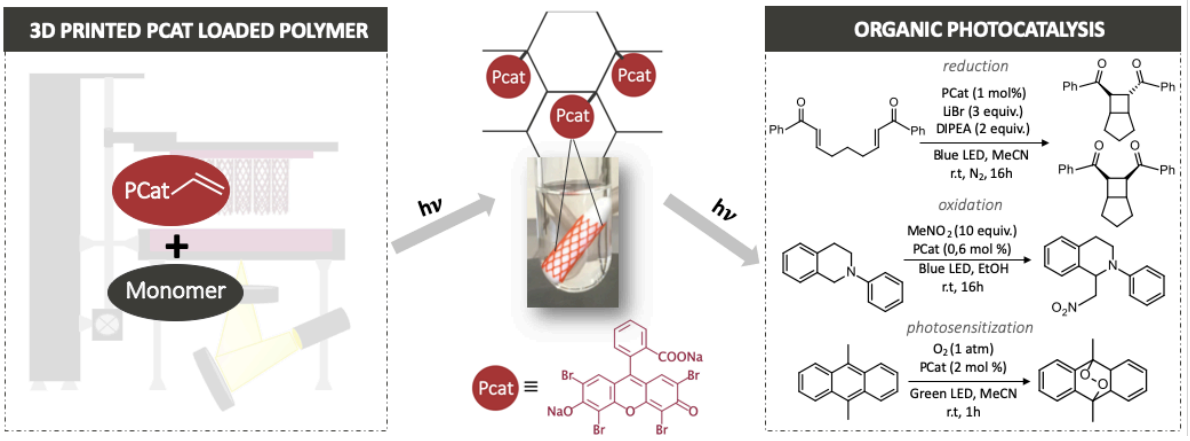
Photocatalysis for organic transformation has been considered as a powerful tool in organic synthesis since its revival in 2008 [1-2]. This innovative field of chemistry relies on the excitation of a photocatalyst (PCat) giving an excited state with unique properties, including the ability to transfer electrons or to transfer energy. However, most of the photocatalysts are prepared and used in homogeneous phase which limits the applications since the photocatalyst is not recovered at the end of the reaction. The solution is to switch from homogeneous to heterogeneous catalysis using a support with high accessibility to PCat [3-4]. The approach of this project is the fabrication and evaluation of new 3D printed polymer-based supported photocatalysts [5-6]. Polymeric supports are synthesized via free radical photopolymerization to yield a recyclable hierarchical polymeric network including a non-toxic PCat (eosin Y) covalently bounded. This 3D-printed object was then adapted to a stirring bar and its photocatalytic activity was evaluated through model organic reactions in oxidation, reduction, and photosensitization [7].



[1] R. C. McAtee, E.J. McClain, C. R. J. Stephenson, *Trends Chem*. **2019**, *1*, 111-125.
[2] M. H. Shaw, J. Twilton, D. W. C. MacMillan, *J. Org. Chem*. **2016**, *81*, 6898-6926.
[3] S.M. Soria-Castro, B. Lebeau, M. Cormier, S. Neunlist, J. Daou, J-P. Goddard, *Eur. J. Org. Chem*. **2020**, *10*, 1572-1578.
[4] N. Mahmoud, J. Awassa, J. Toufaily, B. Lebeau, T.J. Daou, M. Cormier, J-P. Goddard, *Molecules*. **2023**, *28*, 549.
[5] M. Belqat, X. Wu, J. Morris, K. Mougin, T. Petithory, L. Pieuchot, Y. Guillaneuf, D. Gigmes, J. Clément, A. Spangenberg, *Adv Funct Materials*. **2023**, 2211971.
[6] X. Wu, B. Gross, B. Leuschel, K. Mougin, S. Dominici, S. Gree, M. Belqat, V. Tkachenko, B. Cabannes-Boué, A. Chemtob, J. Poly, A. Spangenberg, *Adv Funct Materials*. **2022**, *32*, 2109446.
[7] C. Delacourt, A. Chemtob, J-P. Goddard, A. Spangenberg, M. Cormier, *Chem. Eur. J.* **2024**, e202304363.