ACYLPHOSPHANE OXIDES AS PHOTOINITIATORS: SYNTHESES AND APPLICATIONS

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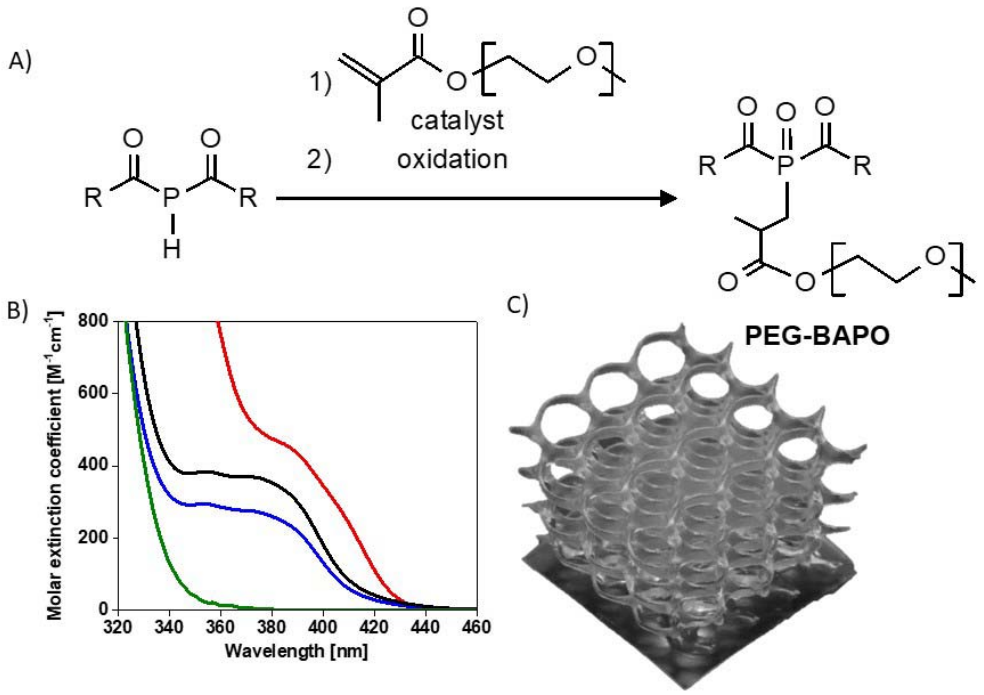
Acylphosphane oxides belong to the most potent photoinitiators used in free radical polymerizations and find a broad range of applications. The detailed understanding of the properties of the phosphorus-containing reagents and building blocks from which acylphosphane oxides can be prepared allowed us to synthesize a variety of mono-acylphosphane oxides (MAPOs) and bis(acylphosphane oxides) (BAPOs). Specifically, highly water soluble BAPOs and macro-molecules carrying multiple BAPO functions could be prepared [1-3]. A typical synthesis is shown below.



In this progress report we will outline new synthetic procedures for BAPOs, discuss the limitations in the search for photolytically efficient acylphosphane oxides, and some new applications which span from 3D printing to their (potential) uses in medicine.

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[2] G. Gescheidt, M. Schmallegger, A. Eibel, J. P. Menzel, A-M. Kelterer, M. Zalibera, C. Barner-Kowollik, H. Grützmacher, *Chem. Eur. J.*, **2019**, *25*, 8982-8986.

[3] O. Poupart, A. Schmocker, R. Conti, C. Moser, K. M. Nuss, H. Grützmacher, P. J. Mosimann, D. P. Pioletti, *Frontiers Bioeng. Biotech.*, **2020**, *8*, online.