New renewable monomers and specialty polymers from levulinic and amino acids

Yann Bernhard [a], ***Lucas Pagies*** [a], ***Sylvain Pellegrini*** [a], ***Till Bousquet*** [a], ***Audrey Favrelle*** [a], ***Lydie Pelinski*** [a], ***Pascal Gerbaux*** [b] ***and Philippe Zinck*** [a*]

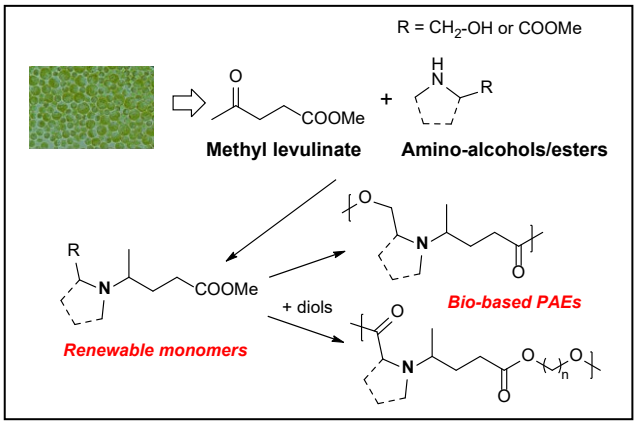
[a)] *Unity of Catalysis and Solid State Chemistry, University of Lille, France*
[b)] *Organic Synthesis & Mass Spectrometry Laboratory, University of Mons, Belgium*

Nowadays, the limited supply, rising cost and environmental impact of the fossil feedstock highlight the necessity to replace petroleum-based materials by bio-based ones. In this field, several efforts have focused on the transformation of the renewable biomass to valuable chemical building blocks and monomers. Biobased polymers of this type have been developed and commercialized, like polylactide for example. In this context, our research group is involved in the ALPO European project, which is a microalgae based biorefinery for polymer materials. Advantageously, this biomass is not competitive with food resources.

One of the examples reported in this contribution is the combination of one of the top 12 chemical building blocks *ie.* levulinic acid, which can be readily obtained from microalgae,[1] with aminoacids derivatives to yield diesters and hydroxyesters bearing a tertiary amine. The homo- or co-polycondensation of these new monomers with renewable diols yields a library of poly(amine-*co*-ester)s or PAEs that show promising potentialities for gene therapy.

[1] S. Yamaguchi, Y. Kawada, H. Yuge, K. Tanaka, S. Imamura, *Sci. Rep.* 2017, 7, 855

Corresponding author e-mail Philippe.Zinck@univ-lille.fr



Author Biography: **Philippe Zinck** obtained his PhD at the National Institute of Applied Science in Lyon, France in 1999. After post-doctoral stays at the Weizmann Institute of Science (individual Marie Curie Fellowship), the Polytechnic Federal School of Lausanne and the Ecole Supérieure de Physique et Chimie Industrielles de la Ville de Paris (ESPCI), he joined the University of Lille where he is currently full professor. His research interests focus on catalysis for functional and biobased polymers.

Name: Philippe ZINCK
University/Institute: University of Lille
Research Interest: Catalysis for functional and biobased polymers