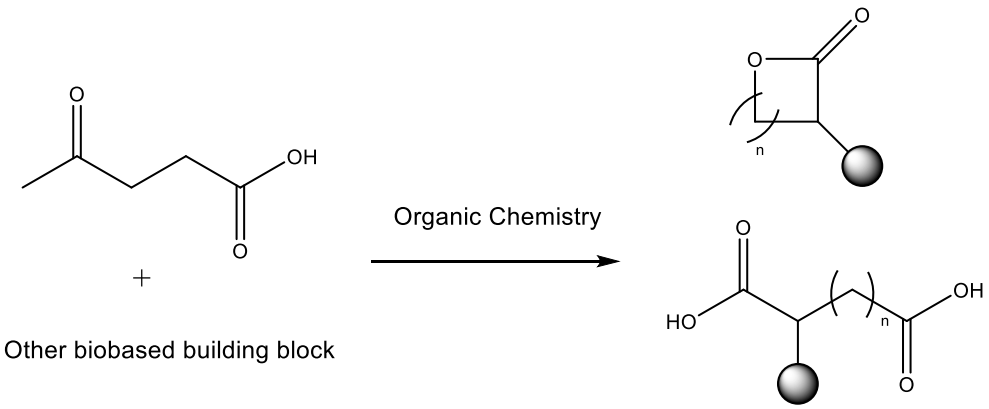
Subject Proposal for Exchange Students in Chemistry

Synthesis of new monomers from levulinic acid

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 plant biomass (starch, oil, lignocelluloses) to valuable chemical building blocks and monomers.

Microalgae biomass *New polymeric materials*

Our research group is involved in the Interreg ALPO European project, which is entitled "Synthesis of New Polymeric Materials from Biomass Microalgae". Advantageously, this third-generation biomass is highly productive and not competitive with food resources. The aim of this "all-in-one" project is to prepare well-known chemical building blocks from microalgae and to transform them in new monomers and next in new functional polymeric materials. The aim of this placement in organic chemistry is, within the frame of the ALPO project, to synthetize new monomers. The starting material selected for this purpose is levulinic acid, which can easily be obtained from microalguae.[1] Targeted monomers include notably functionalized lactones and functionalized dicarboxylic acids. Depending on the interest of the successful candidate, a few polymerization experiments may also be conducted in the second part of the placement.



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[1] J. J. Bozell, G. R. Petersen, *Green Chem.* **2010**, *12*, 539–554; S. Yamaguchi, Y. Kawada, H. Yuge, K. Tanaka, S. Imamura, *Sci. Rep.* **2017**, *7*, 855