

N°951 /

TOPIC(s) : Biomass conversion / Alternative technologies

Biorefinery Schemes towards Platform Chemicals: heterogeneous organocatalysis and hyperpolar solvent media

AUTHORS

Markus ANTONIETTI / MPI-KGF, AM MÜHLENBERG 1, POTSDAM

PURPOSE OF THE ABSTRACT

Sustainability of future chemical products and cycles depends to a larger extent on bio-based molecules, monomers and polymers which are ideally less toxic, inert or even biodegradable. The "Biorefinery" based on lignocellulosic materials already delivers cellulose/paper, but also bioethanol, sugars, and lignin as a side product. These schemes can be conveniently expanded to the needs of chemistry, with a cost level usually below 1 €/kg for most products. When expanded to side products as bagasse or even biomass waste, we expect the availability of compounds on the cost level of processing, only.

Major problem of biorefinery is the oxygen-rich character (ca. 50 wt% of the starting products, which demands water/polar solvents as a medium and catalysts very different from petrochemistry. We present heterogeneous catalysts being stable even under extreme pH hydrothermal conditions which allow "novel" biorefinery schemes.

I will report on some modern approaches and processes to create monomers, solvents, plasticizers, but even complete curable oligomer systems from wood-like waste products. If time allows, I will also report on new, simple, cheap hyperpolar solvent media for very unusual biomass chemistry.

FIGURES

FIGURE 1

FIGURE 2

KEYWORDS

BIBLIOGRAPHY