ENZYMATIC SYNTHESIS AND POLYMERIZATION OF ISOSORBIDE-BASED MONOMETHACRYLATES FOR HIGH-T_g PLASTICS

Livia Matt[1], Jaan Parve[2], Omar Parve[2], Tõnis Pehk[3], Thanh Huong Pham[4], Ilme Liblikas[1], Lauri Vares[1], Patric Jannasch[1,4]

[1]*Institute of Technology, University of Tartu, Nooruse 1, Tartu 50411, Estonia*
[2]*Department of Chemistry and Biotechnology, Tallinn University of Technology, Ehitajate tee 5, Tallinn 19086, Estonia*
[3]*Laboratory of Chemical Physics, National Institute of Chemical Physics and Biophysics, Akadeemia tee 23, Tallinn 12618, Estonia*
[4]*Department of Chemistry, Lund University, Box 124, Lund 221 00, Sweden*
e-mail: livia.matt@ut.ee

Novel bio-based materials are urgently needed to replace the unsustainable petroleum-based polymers. An attractive compound derived from lignocellulosic biomass is isosorbide (Fig.1), which has attracted significant interest in polymer synthesis due to its rigidity, chirality, relative stability, and nontoxicity [1,2].

Herein we present a high yielding, highly regioselective and easily upscalable biocatalytic approach for variously substituted isosorbide-based methacrylates (Fig.1) [3].

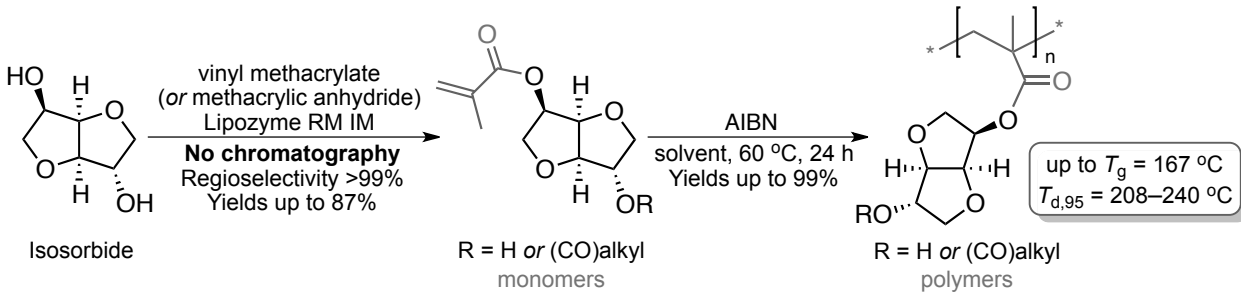

Fig.1 Biocatalytic synthesis of isosorbide monomethacrylates and the subsequent radical polymerization of these monomers.

Following conventional radical polymerization of the monomers afforded rigid isosorbide-based polymethacrylates suitable as high-performance plastics in demanding applications (Fig.1) [3].

References

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