

JOINT EVENT ON

5th International Conference on Bioplastics and 6th World Congress on Biopolymers

September 07-09, 2017 | Paris, France

Chemo-enzymatic synthesis and polymerizations of bio-based bisphenols derived from ferulic and sinapic acids

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Novel renewable bisphenols were prepared through chemo-enzymatic processes under mild conditions from ferulic and sinapic acids. The enzyme-catalyzed steps have been optimized and lead to high purity grade bisphenols in high to excellent yields. The antiradical/antioxidant properties of these bio-based bisphenols were investigated and revealed activities similar or higher than that of current commercially available antiradical/antioxidant additives such as Irganox 1010[®]. The bisphenols were then used as monomers for the preparation of various types of polymers such as copolyesters, polyurethanes, polyolefins, non-isocyanates polyurethanes (NIPUs)⁶ and epoxy resins^{7,8,9}. The newly obtained materials were then characterized by NMR, GPC, DSC, TGA and DMA. These analyses revealed not only good thermal stabilities but also a broad range of accessible Tg.

Biography

Dr Marine Janvier is currently a post-doctoral researcher in Chemistry at the Chair ABI (Industrial Agro-Biotechnologies) in Reims (France). She has completed her PhD in green chemistry from University Claude Bernard (Lyon, France) where she studied the applications of isohexides as a new biobased platform for organocatalysis, developing an expertise in organic synthesis. She joined Professor Florent Allais' research group (Chair ABI) in 2016 for a post-doctoral fellowship dedicated to the use of syringaresinol as a platform molecule for the production of functional antiradical/antioxidant additives as well as monomer for polymerizations. Applications to epoxy-amine resins and non-isocyanate polyurethanes have shown the high interest of syringaresinol as a genuine renewable and safer replacement to toxic bisphenol-A. Those results have been published in peer-reviewed journals and presented in international congresses (ACS Philadelphia 2016 and ISGC La Rochelle 2017).

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