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Synthesis of Cardanol Oil Building Blocks for Polymer Synthesis

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Abstract : Uncertainty in terms of price and availability of petroleum, in addition to global political and institutional tendencies toward the principles of sustainable development, urge chemical industry to a sustainable chemistry and particularly the use of renewable resources in order to synthesize biobased chemicals and products. We propose a platform approach for the synthesis of various building blocks from cardanol in one or two-steps syntheses. Cardanol, which is a natural phenol, is issued from Cashew Nutshell Liquid (CNSL), a non-edible renewable resource, co-produced from cashew industry in large commercial volumes. Cardanol is particularly interesting to replace fossil aromatic groups in polymers and materials. Our team studied various routes for the synthesis of cardanol-derived biobased building blocks used after that in polymer syntheses. For example, we used phenolation to dimerize/oligomerize cardanol to propose increase functionality of cardanol. Thio-ene was used to synthesize new reactive amines. Epoxidation and (meth)acrylation were also used to insert oxirane or (meth)acrylate groups in order to synthesize polymers and materials.

Keywords : cardanol, cashew nutshell liquid, epoxy, vinyl ester, latex, emulsion
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