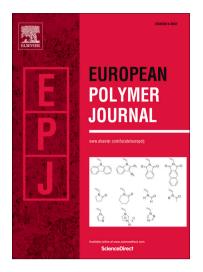
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High-performance bio-based benzoxazines derived from

phosphinated biphenols and furfurylamine

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Abstract

The purpose of this work is to achieve high-performance benzoxazine thermosets from renewable biomass such as furfurylamine and vanillin-derived biphenol. The benzoxazine (DVP-fu) derived from a vanillin-derived biphenol and furfurylamine shows promising properties after thermal curing. To understand the structure-property relationship, two other structurally-similar benzoxazines (DHP-fu and DVG-fu) derived from biphenols (DHP and DVG) were prepared. Thermal analyses (DMA, TMA, and TGA) show that the thermosets of DHP-fu and DVP-fu are high-performance materials, demonstrating that the sustainability and high performance could be achieved simultaneously. This study found that their properties are strongly related to the number of free ortho to the oxygen of oxazine.

Keywords: bio-based benzoxazine; thermosets; furfurylamine; vanillin-derived biphenol

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