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# High-performance bio-based benzoxazines derived from phosphinated biphenols and furfurylamine

Chia-Min Lin,<sup>a</sup> Chien-Han Chen,<sup>ab</sup> Ching-Hsuan Lin,<sup>ab\*</sup> Tzong-Yuan Juang<sup>c</sup>

<sup>a</sup> Department of Chemical Engineering, National Chung Hsing University, Taichung, Taiwan.

<sup>b</sup> Advanced Research Center for Green Materials Science and Technology, National Taiwan University, Taipei 10617, Taiwan.

<sup>c</sup> Department of Cosmeceutics, China Medical University, Taichung, Taiwan.

E-mail: lynch@nchu.edu.tw; Tel: 886-4-22850180; Fax: 886-4-22854734.

## 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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