

Sustainable Polybenzoxazines: Upcoming Class of Phenolic Polymers

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Abstract

Depleting fossil fuel reserves and increasing waste reservoirs are among the world's most pressing problems. This calls for exploring naturally occurring building blocks for developing bio-based polymers. Polybenzoxazines is a new class of thermally curable thermosets being pitched as superior alternates of phenolics. In this work we intend to exploit the options of synthesizing partially bio-based polybenzoxazines following green chemical principles of atom economy, bio-renewable feedstock, solventless synthesis, and nontoxic waste generation. In addition, the molecular flexibility of benzoxazine moiety has been utilized by studying the relation between higher functionality and properties. These polymers have shown improved thermal stability compared to their non-green counterparts and the ability to copolymerize with other industrial wastes/resources, thus finding wide applicability from adhesive and antibacterial materials to cathodes for energy storage devices.



References

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