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A novel synthetic approach in the preparation of maleimide containing benzoxazine resins

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Maleimide containing benzoxazine resins are known to have high glass transition temperatures (200 to 350°C) and good thermal stability, which is why they have vast potential as high performance materials. However, according to the literature, they lack the diversity, since most of these resins are derivatives of 4-hydroxyphenylmaleimide. Most commonly used synthetic approach for preparing benzoxazines with maleimide moieties is the reaction of 4-hydroxyphenylmaleimide with paraformaldehyde and desired amine. For that reason the diversity arises only from the amine substitution pattern as the phenolic part is kept unchanged in most of the resins. A novel approach towards preparation of maleimide containing benzoxazine resins is presented. Anilino maleimide species is produced by four step modification of 4,4-diaminodiphenylmethane with maleimide group. The derived compound is further used in the preparation of maleimide containing benzoxazines. This novel synthetic strategy significantly broadens the scope of structural diversification of maleimide containing benzoxazines and their high performance polymeric forms, due to the possibility of phenol diversification.

Biography

Žiga Štirn, Master of Science (Chemistry), is a Researcher at the Faculty of Chemistry and Chemical Technology, University of Ljubljana. He is currently pursuing his PhD in Chemical Engineering. His main research is focused on self-healing polymer materials based on Diels-Alder reaction.

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