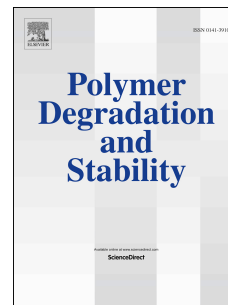


# Accepted Manuscript

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PII: S0141-3910(18)30282-9

DOI: [10.1016/j.polyimdeggradstab.2018.09.002](https://doi.org/10.1016/j.polyimdeggradstab.2018.09.002)

Reference: PDST 8627

To appear in: *Polymer Degradation and Stability*

Received Date: 29 June 2018

Revised Date: 27 August 2018

Accepted Date: 2 September 2018

Please cite this article as: Thompson S, Howlin BJ, Stone CA, Hamerton I, Exploring the thermal degradation mechanisms of some polybenzoxazines under ballistic heating conditions in helium and air, *Polymer Degradation and Stability* (2018), doi: 10.1016/j.polyimdeggradstab.2018.09.002.

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# Exploring the Thermal Degradation Mechanisms of Some Polybenzoxazines Under Ballistic Heating Conditions in Helium and Air

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**ABSTRACT:** The degradation behaviour of five polybenzoxazines (PBZs) is studied using pyrolysis-GC/MS. Upon heating to 800 °C in helium the PBZs generate a variety of similar pyrolysis products including aniline (the major product in all cases), substituted phenols, acridine, and 9-vinylcarbazole. During the initial stages of heating (200 to 300 °C) aniline is the dominant pyrolysis product; from 350 °C onwards substituted phenols are released, particularly 2-methylphenol and 2,6-dimethyl phenol. The same major species are produced on heating in air, but in addition isocyanatobenzene is observed which results from the oxidation of Mannich bridges, along with a number of sulphurous species from the monomer containing a thioether bridge. This suggests that sulphur is more likely to be retained in the

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