



## Combining benzoxazine and ketene chemistries for self-healing of high performance thermoset surfaces

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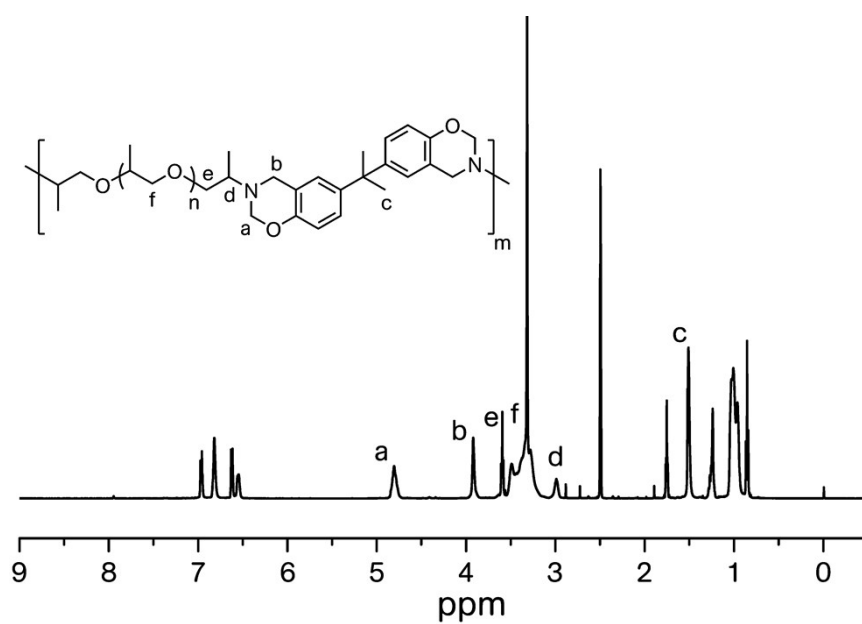
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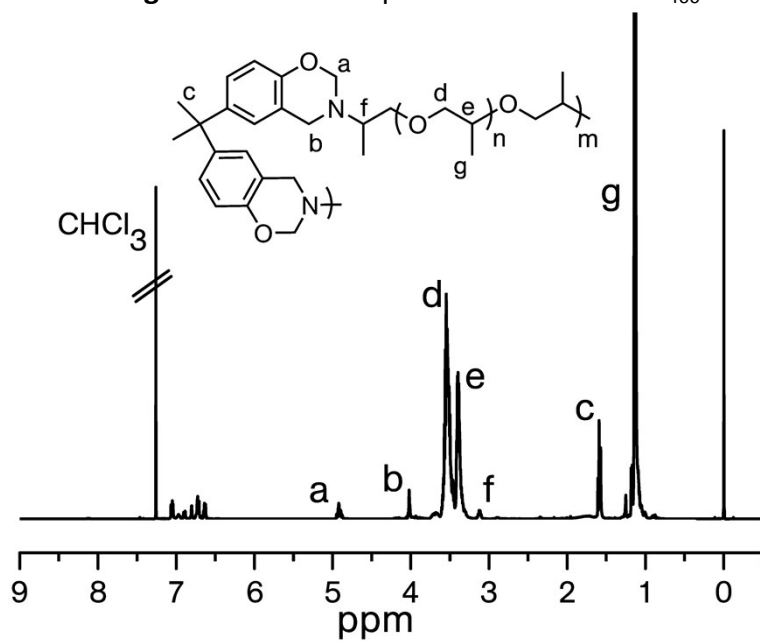
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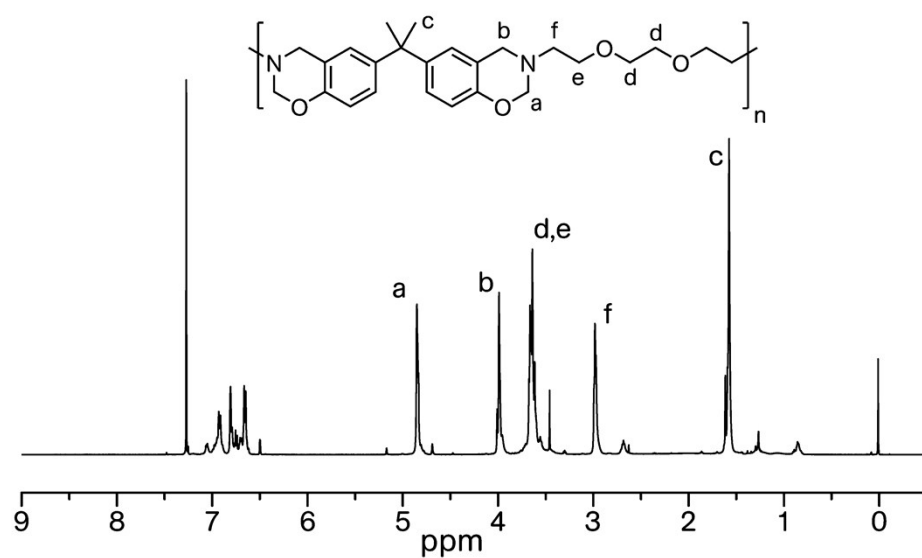
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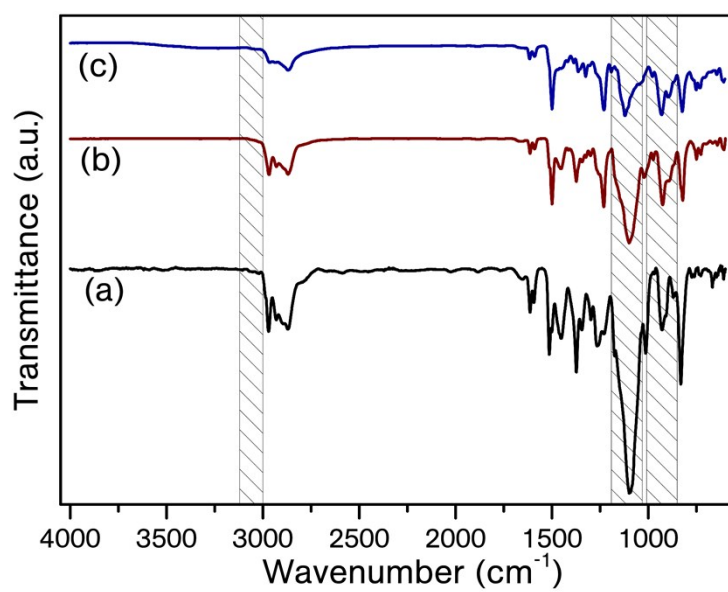
**Figure S1:** <sup>1</sup>H NMR spectrum of MPBz-PEA<sub>400</sub>



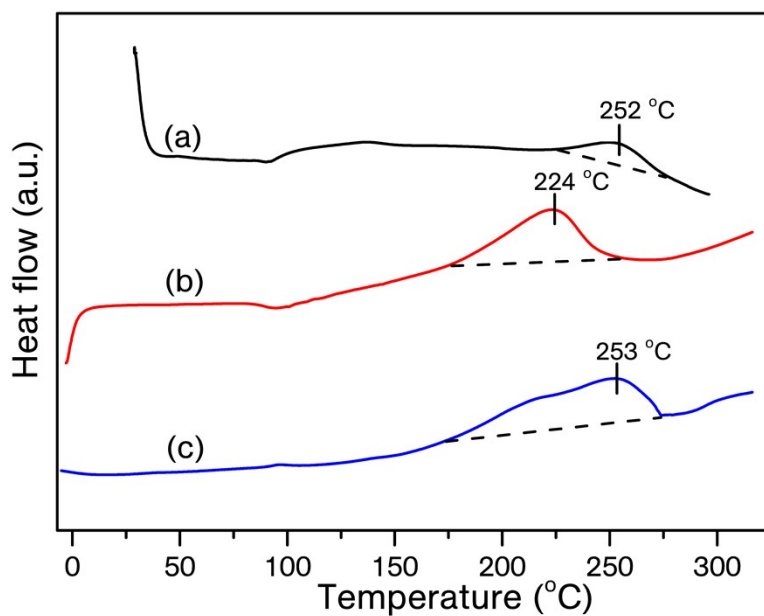
**Figure S2:** <sup>1</sup>H NMR spectrum of MPBz-PEA<sub>2000</sub>



**Figure S3:** <sup>1</sup>H NMR spectrum of MPBz-Et



**Figure S4:** FTIR spectra of MPBz-PEA<sub>2000</sub> (a), MPBz-PEA<sub>400</sub> (b), MPBz-Et (c).

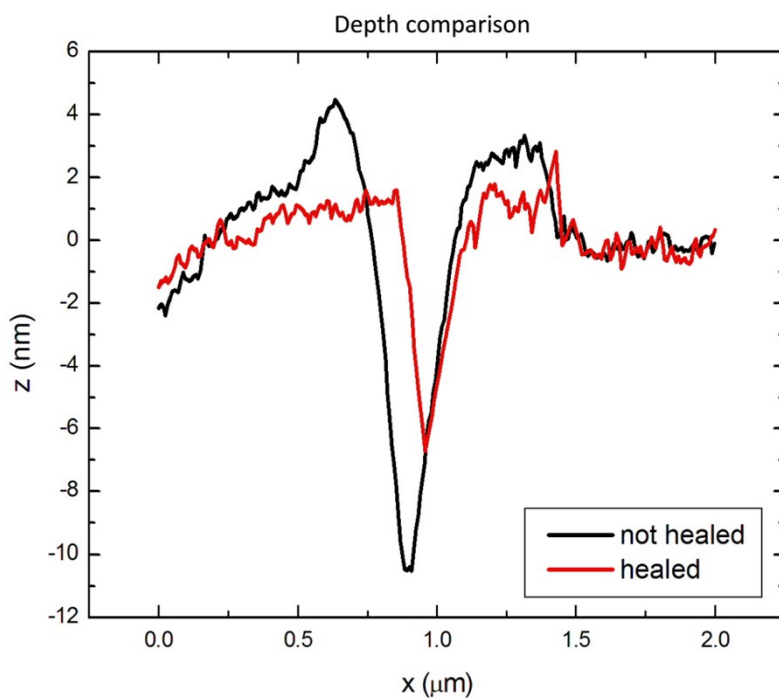


**Figure S5:** DSC traces of MPBz-PEA<sub>2000</sub> (a), MPBz-PEA<sub>400</sub> (b), MPBz-Et (c)

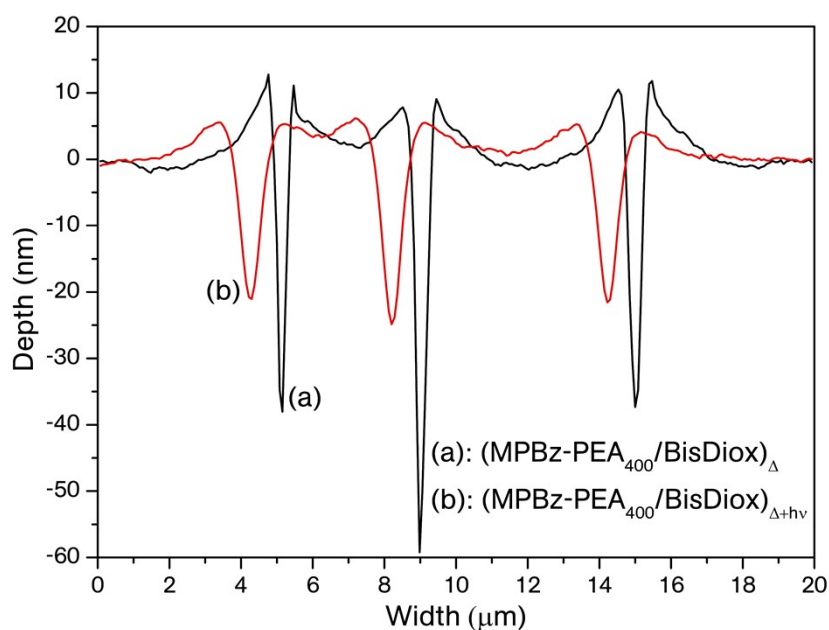
**Table S1:** DSC\* characteristics of main chain benzoxazine precursors.

Precursor	On-set temp. of curing (°C)	Maximum curing temp. (°C)	End-set temp. of curing (°C)	$\Delta H$ of curing (j/g)
MPBz-Et	172	253	273	-109
MPBz-PEA <sub>400</sub>	181	224	250	-54
MPBz-PEA <sub>2000</sub>	221	252	275	-20

\*DSC measurements were performed under nitrogen flow (20 mL.min<sup>-1</sup>) with a scan rate of 10 °C.min<sup>-1</sup>.



**Figure S6:** Depth and width of scratch on the surface of the MPBz-Et film before and after healing



**Figure S7:** Depth and width of scratch on the surface of the MPBz-PEA<sub>400</sub>/BisDiox film before and after healing at room temperature.