

Supporting Information

Design of Esters Crosslinked Rubber with High Dynamic Properties by Increasing Dynamic Covalent Bond Density

Li Yang^a, Luji Li^a, Lihua Fu^a, Baofeng Lin^a, Yueqiong Wang^{b}, Chuanhui Xu^{a,b*}*

^a Guangxi Key Laboratory of Petrochemical Resource Processing and Process Intensification Technology, School of Chemistry and Chemical Engineering, Guangxi University, Nanning 530004, China

^b Key Laboratory of Tropical Crop Products Processing of Ministry of Agriculture and Rural Affairs, Agricultural Products Processing Research Institute, Chinese Academy of Tropical Agricultural Sciences, Guangdong 524001, China

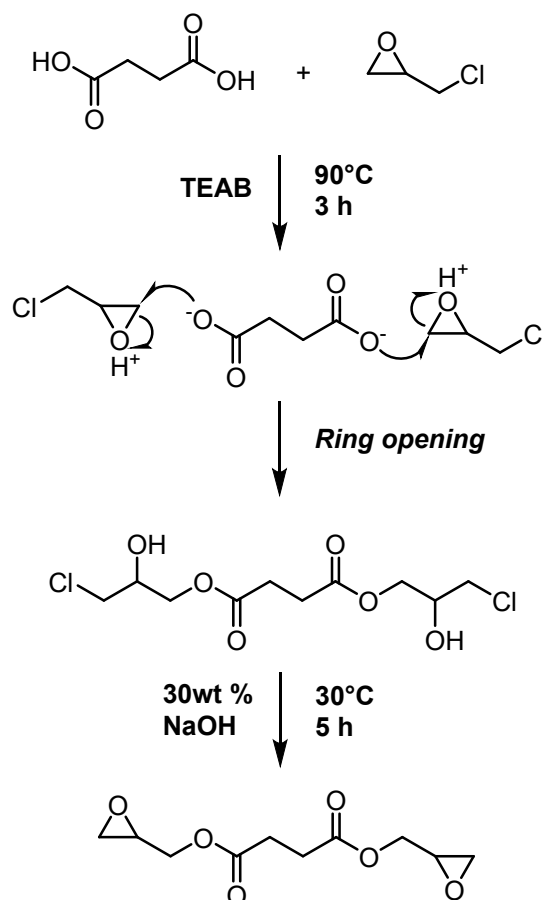
* E-mail: xuhuiyee@gxu.edu.cn (*Chuanhui Xu*); yqw215@163.com (*Yueqiong Wang*)

1. Characterization

ESI-ION TRAP mass (ESI-MS) spectrum was recorded with a Thermo Scientific Q Exactive. And ammonium formate was added to adjust pH and help ionization of DGESA.

XRD patterns were recorded on an X-ray diffractometer (Rigaku SMARTLAB, Japan) with Cu K α radiation (40 kV, 40 mA) for a 2 θ range of 5-60° with a scanning rate of 5°/min.

2. Results and discussion



Scheme S1 Reaction mechanism of DGESA by the reaction of SA with ECH.

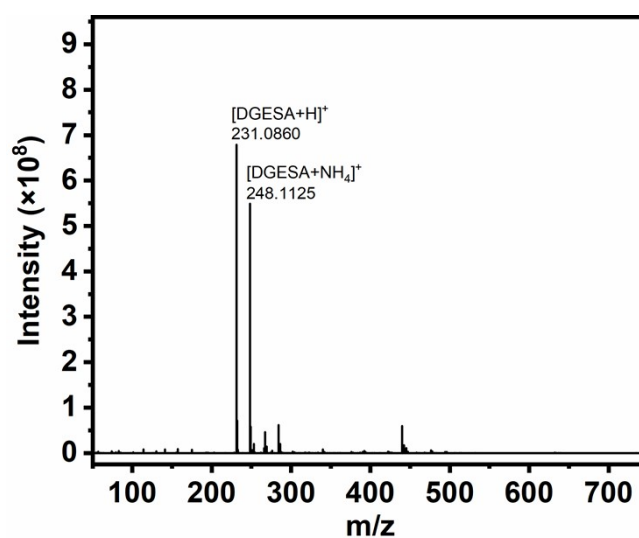


Figure S1 ESI-MS spectrum of DGESA.

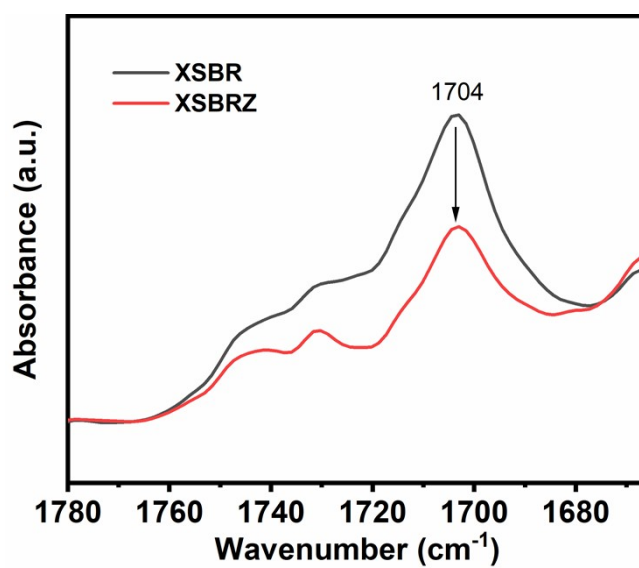


Figure S2 FTIR spectra of XSBR and XSBRZ.

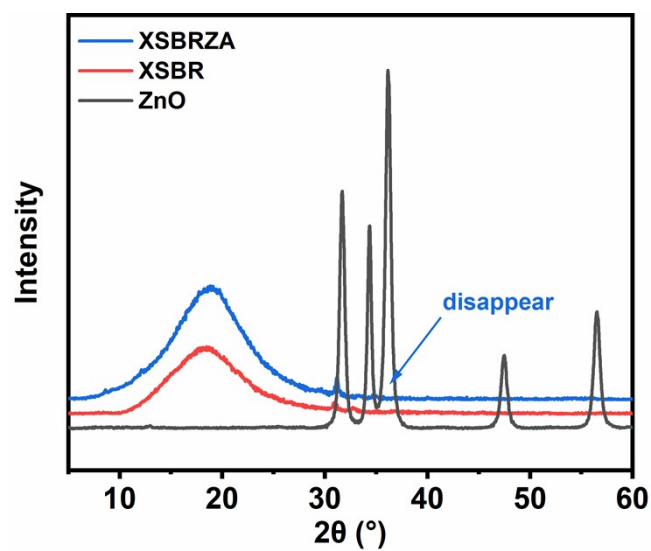


Figure S3 XRD curves of ZnO, XSBR, and XSBRZA.

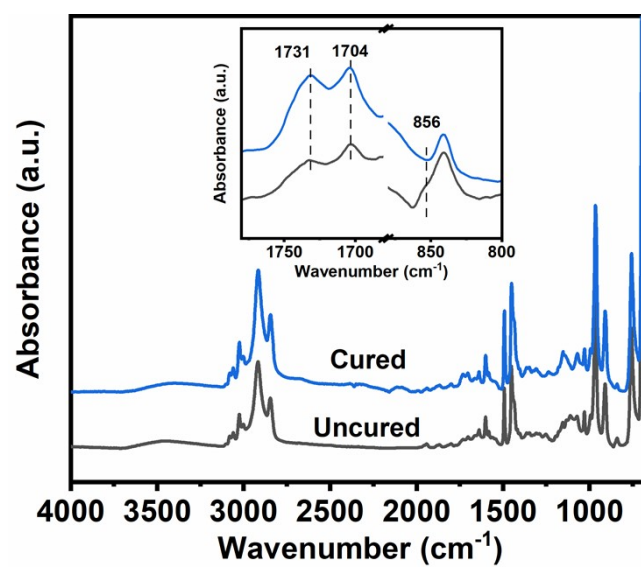


Figure S4 FTIR spectra of XSBRZO before and after curing.

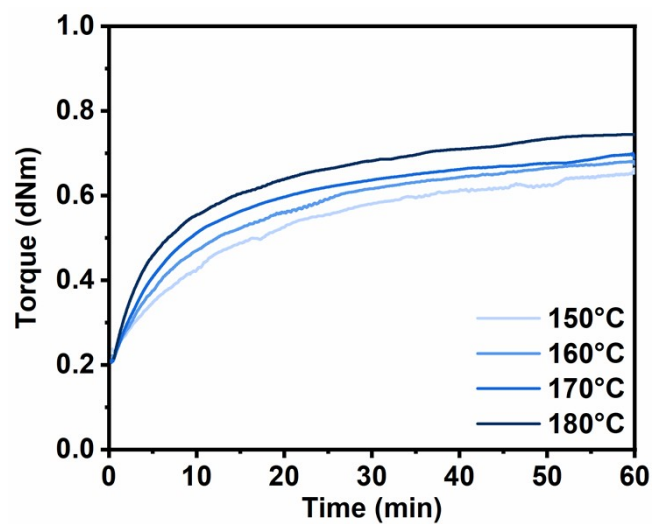


Figure S5 Curing curves of XSBRZO at different temperatures.

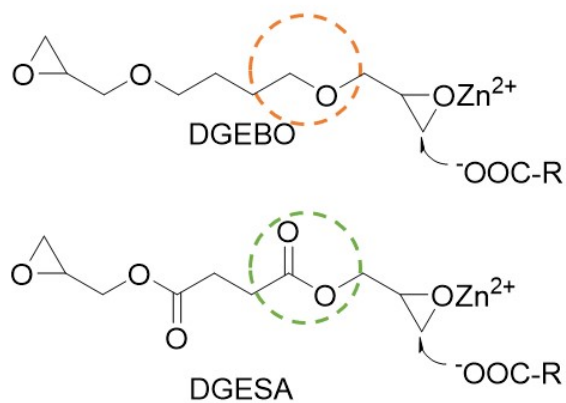


Figure S6 Reaction mechanism of DGESA and DGEBO with carboxyl group.

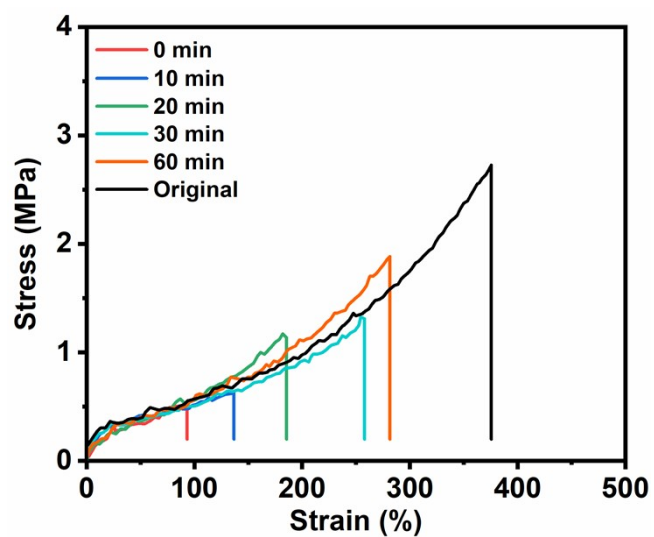


Figure S7 Typical stress-strain curves of XSBRZO for various healing times at 180°C.

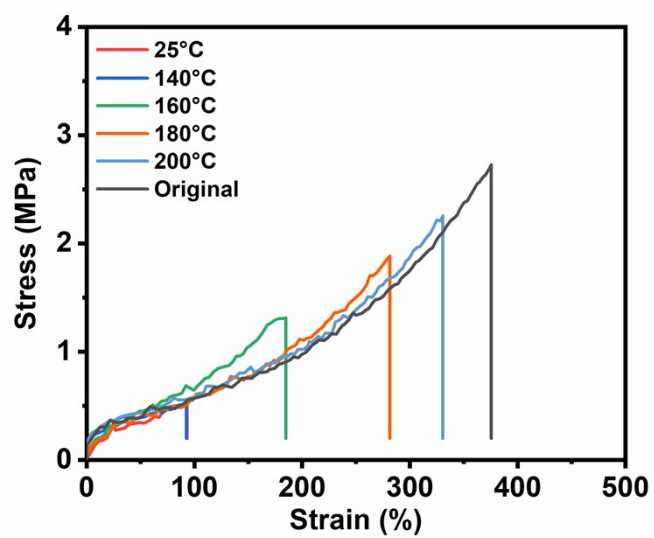


Figure S8 Typical stress-strain curves of XSBRZO for 60 min at various healing temperatures.

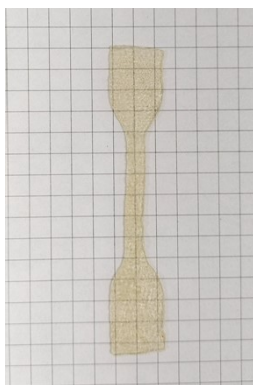


Figure S9 Photo of 5th reprocessed XSBRZO.

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- (3) Zhong, L.; Hao, Y.; Zhang, J.; Wei, F.; Li, T.; Miao, M.; Zhang, D. Closed-Loop Recyclable Fully Bio-Based Epoxy Vitrimers from Ferulic Acid-Derived Hyperbranched Epoxy Resin. *Macromolecules* 2022, 55 (2), 595-607. DOI: 10.1021/acs.macromol.1c02247.