Supportting information

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1. Structural characterization of monomers

1.1. Furfuryl glycidyl ether (FGE)



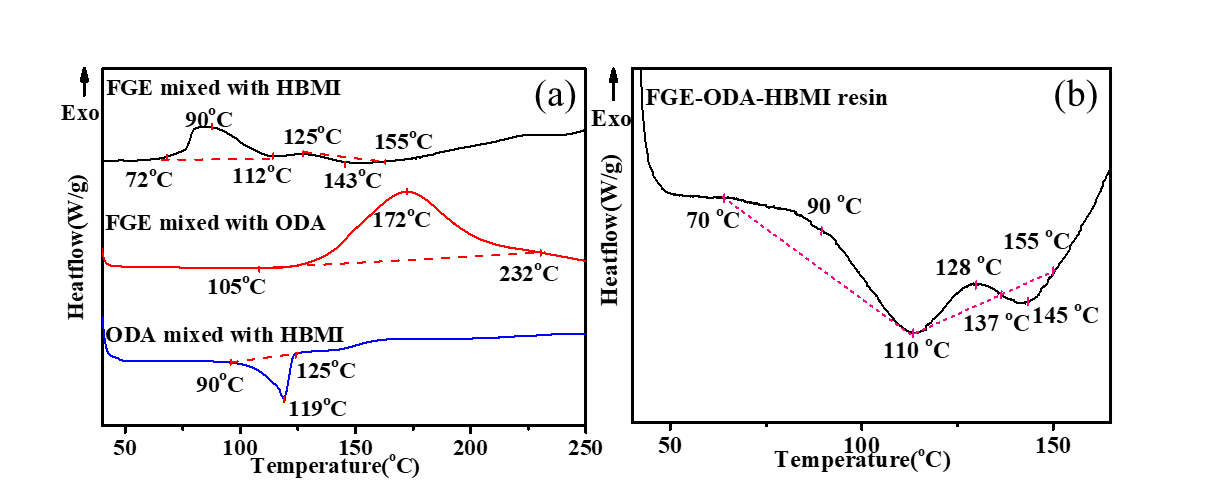
**Figure S1.** 1H-NMR spectra (a), FT-IR spectra (b), EI-MS spectra (c), and DSC curve (d).

1.2. N, N'-hexamethylene-bismaleimide (HBMI)

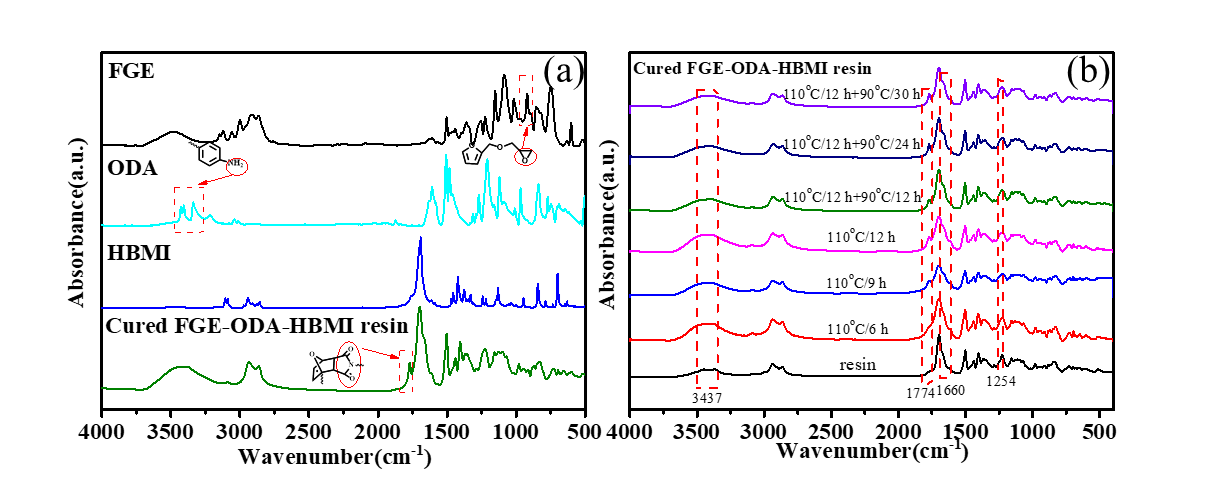


**Figure S2.** 1H-NMR spectra (a), FT-IR spectra (b), EI-MS spectra (c), and DSC curve (d).

2. Curing procedures and structural characterization of FGE-ODA-HBMI resin

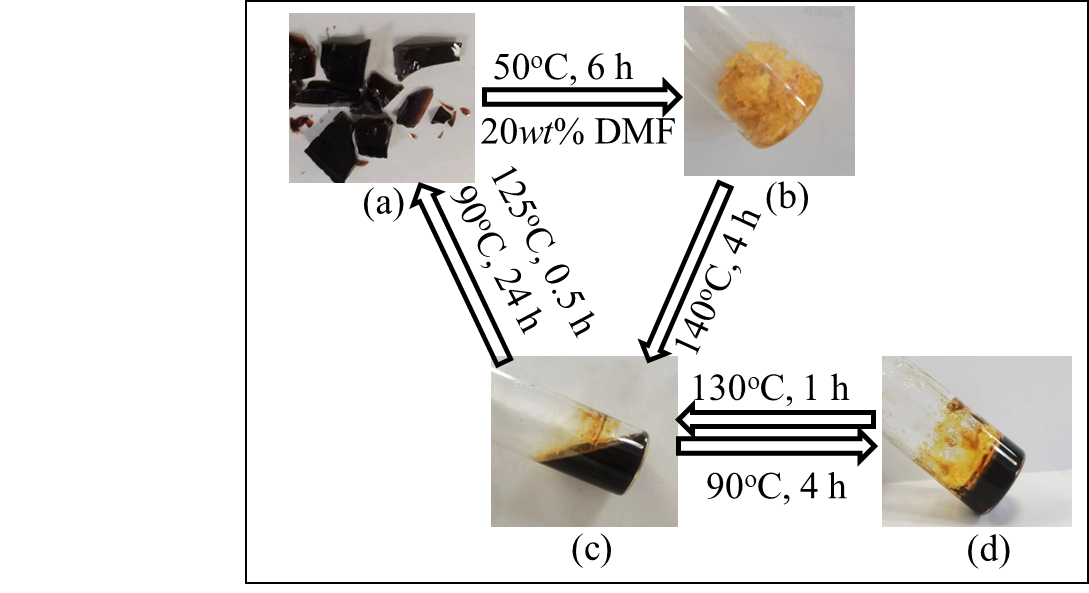


**Figure S3.** DSC curves of FGE mixed with HBMI, FGE mixed with ODA, ODA mixed with HBMI (a), DSC curves of FGE-ODA-HBMI resin (b).



**Figure S4.** FT-IR spectra of the cured FGE-ODA-HBMI resin and its raw materials(a), and FGE-ODA-HBMI resin at different curing stage (b)**.**

3. The sol-gel transformation process of the cured FGE-ODA-HBMI resin



**Figure S5.** The photos of sol-gel transformation process for the cured FGE-ODA-HBMI resin: the small fragments of cured resin (a), the swelled state of cured resin (b), the dissolved state of cured resin (c), the gel state of cured resin (d).