Supporting Information

High-performance 3D printing UV-curable resins derived from soybean oil and gallic acid

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S1. Characterization of HEMA

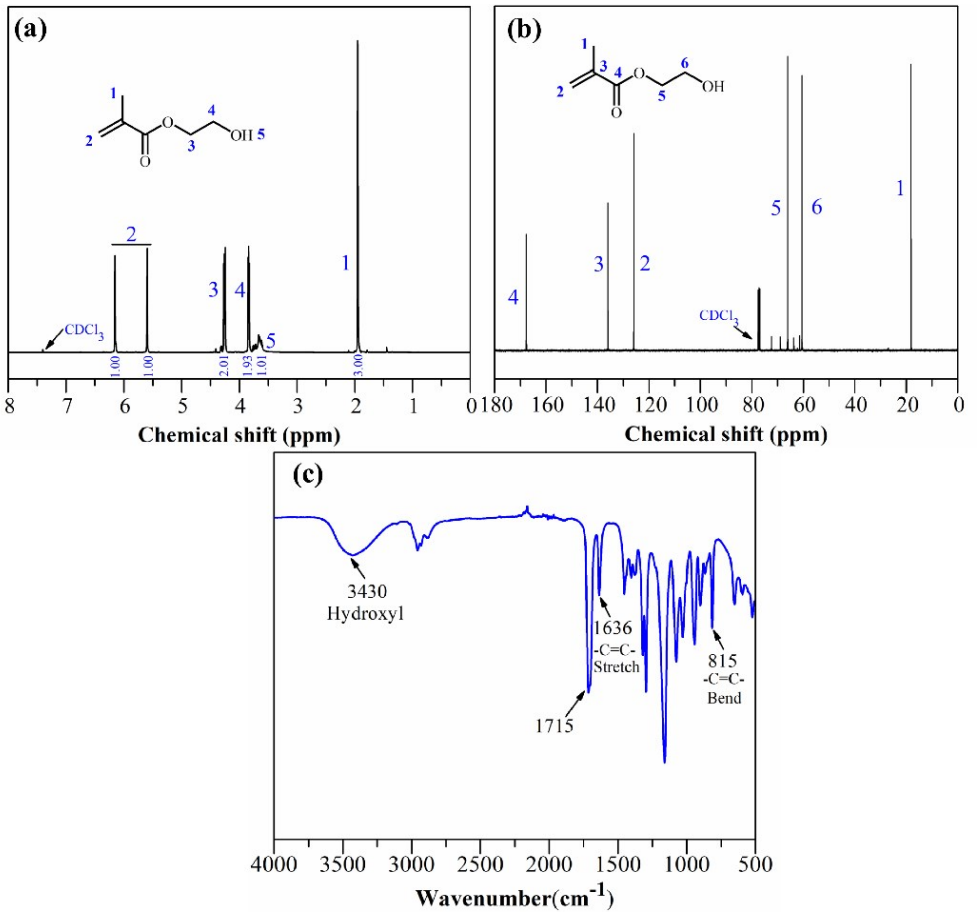

Fig. S1 (a) The ^{1}H NMR spectra, ^{13}C NMR spectra and FT-IR spectra of the diluent HEMA.

The HEMA is a colorless transparent liquid with a viscosity of 6 mPa·s at room temperature.
^{1}H NMR ($CDCl_3$, δ ppm) 6.14 (s, 1H), 5.60 (m, 1H), 4.28 (t, 2H), 3.84 (t, 2H), 3.69 (m 1H), 1.95 (S, 3H).
^{13}C NMR ($CDCl_3$, δ ppm) δ 167.69 (s), 135.95 (s), 125.89 (s), 66.13 (s), 60.56 (s), 18.09 (s).
FT-IR (cm^{-1}) 3430, 2957, 1715, 1636, 1453, 1319, 1296, 1161, 1077, 1030, 942, 901, 815, 652, 523.

S2. Possible mechanism of gelled during the synthesis of GMAESO

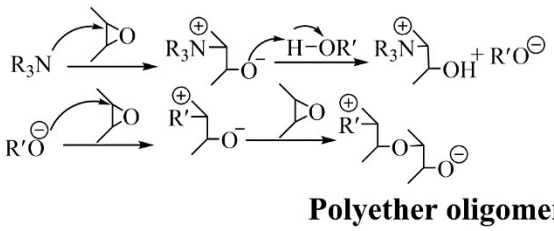

Fig. S2 Possible mechanism of gelled during the synthesis of GMAESO.

S3. Acid value of GATA/MAA

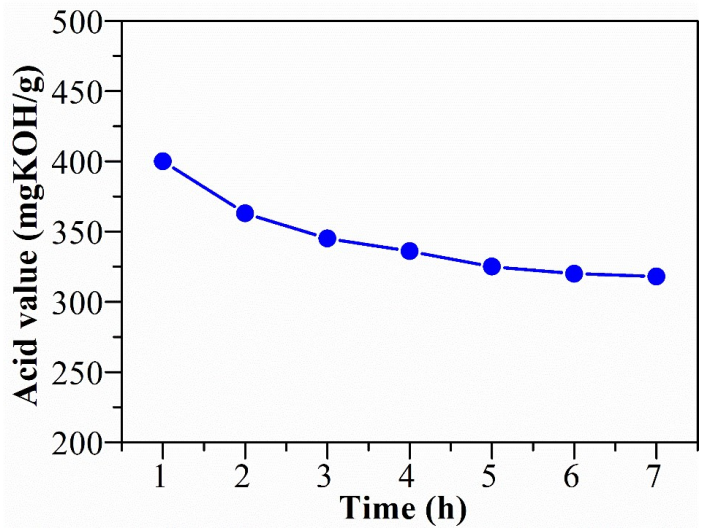

Fig. S3 Acid value *vs.* time during the synthesis of GATA/MAA.

S4. Acid value of GMAESO

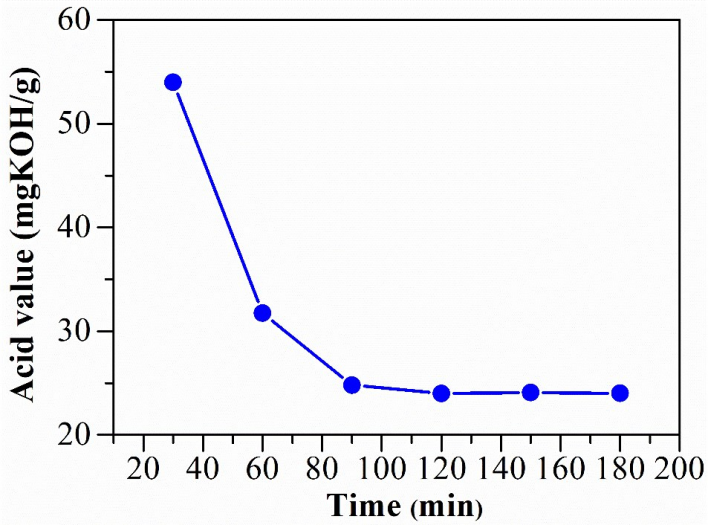

Fig. S4 Acid value *vs.* time during the synthesis of GMAESO.

S5. FT-IR spectra of GA, MAAH, and GATA/MAA

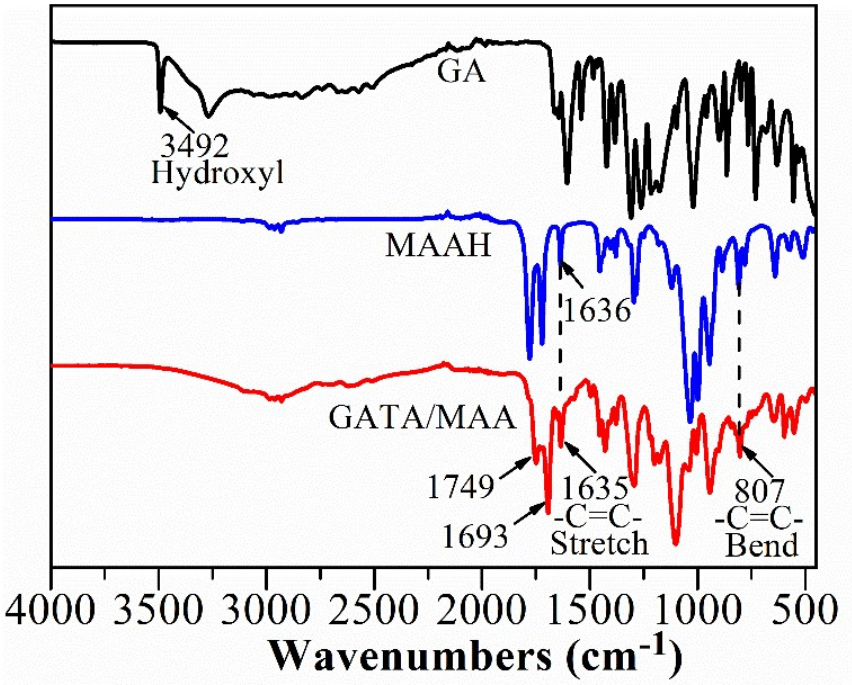

Fig. S5 FT-IR spectra of GA, MAAH and GATA/MAA.

The synthesis of GATA/MAA was confirmed by FT-IR spectra (**Fig. S4**). In the GATA/MAA spectrum, the typical peaks at 2500-3400 cm^{-1}, 1749 cm^{-1}, 1693 cm^{-1} and 1635/807 cm^{-1} were assigned to carboxyl, carbonyl groups of MAA, ester carbonyl of GATA, and C=C bonds of GATA/MAA, respectively. In addition, the disappearance of the peak at 3492 cm^{-1} belonging to phenolic hydroxyl groups can also indicate the successful synthesis of GATA/MAA. In the ^{1}H-NMR spectra of GATA/MAA (**Fig. 2(a)**), the peak at 11.5 ppm, 7.9 ppm, 5.6-6.5 ppm, and 1.9 ppm were assigned to the protons of carboxyl groups of MAA/GATA, benzene ring of GATA, vinyl groups GATA/MAA, and methyl groups of GATA/MAA, respectively. Besides, the disappearance of the peak at 3.50 ppm corresponding to the protons of GA hydroxyl groups also indicated the successful synthesis of GATA/MAA.

S6. ^{13}C NMR spectrum of ESO

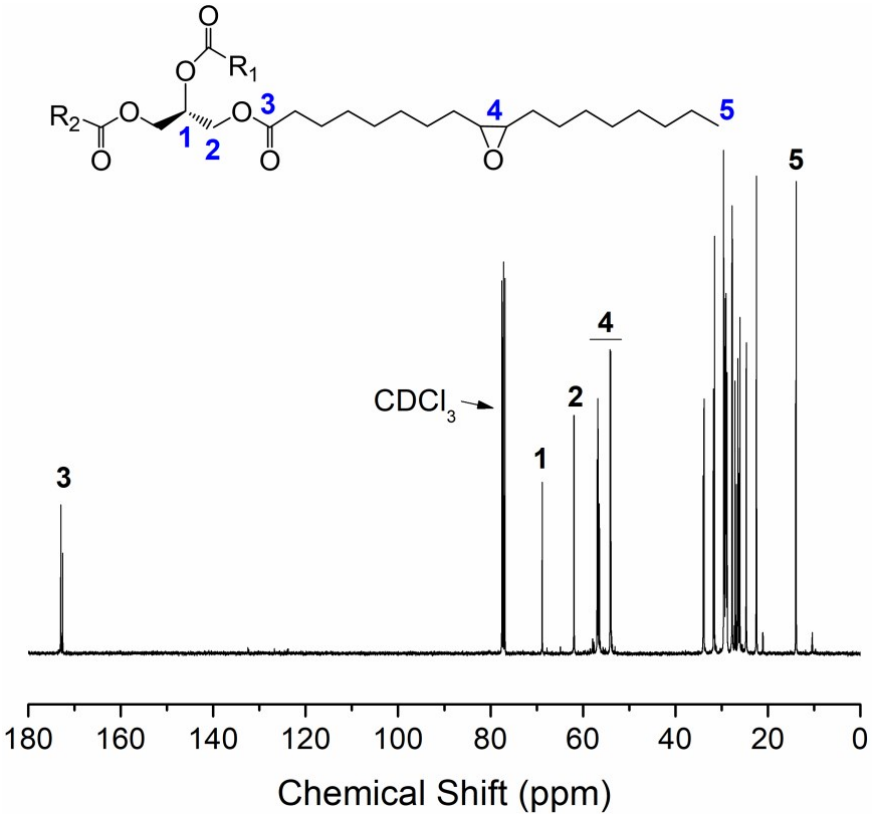

Fig. S6 ^{13}C NMR spectrum of ESO.

^{13}C NMR ($CDCl_3$, δ ppm) 174.88 – 170.44 (m), 80.55 – 74.90 (m), 70.68 – 67.14 (m), 63.38 – 60.07 (m), 58.71 – 54.72 (m), 54.72 – 51.64 (m), 34.92 – 32.14 (m), 31.57 (s), 30.25 – 28.60 (m), 28.60 – 26.72 (m), 26.04 (s), 25.06 – 23.63 (m), 22.46 (s), 13.88 (s).

S7. The line model and the surface image of line model

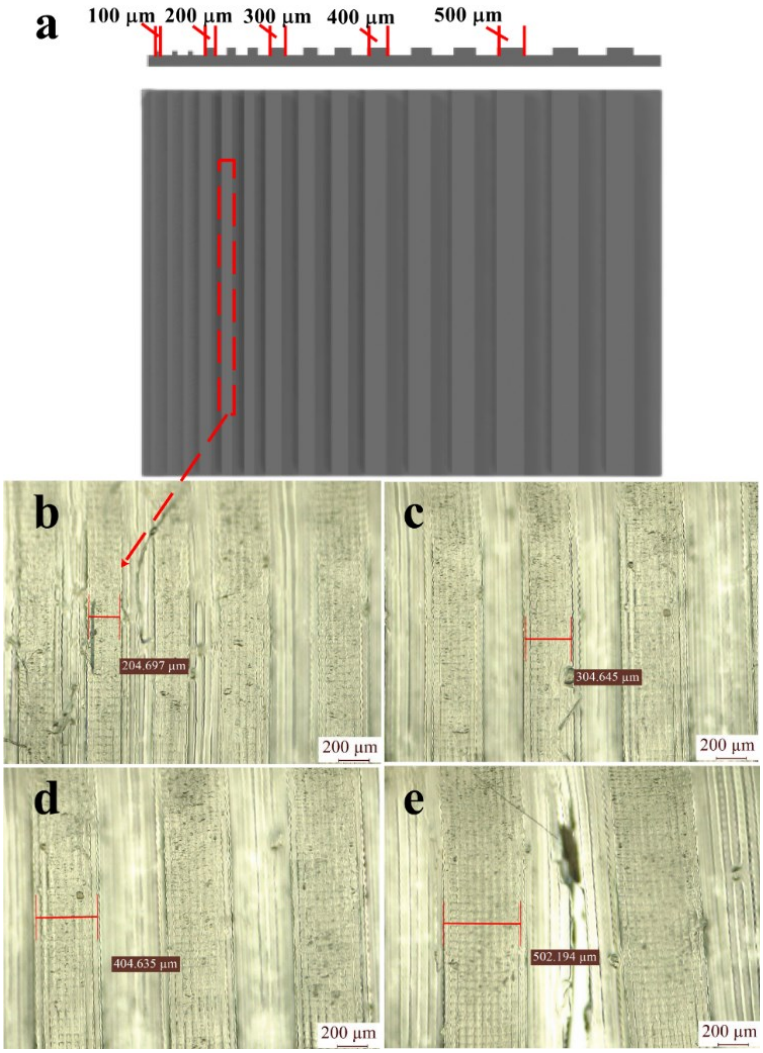

Fig. S7 The line model and the surface image of line model.