Deposited structure design of epoxy composites with excellent electromagnetic interference shielding performance and balanced mechanical properties

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1. Electromagnetic Interference (EMI) Shielding Measurements

The physical parameters for evaluating the EMI performance can be calculated based on the scattering parameters ($S11$ and $S21$). The relevant formulas are shown as follows:

$$R = |S11|^2$$

$$T = |S21|^2$$

$$A + R + T = 1$$

$$\mathrm{SETotal} = -10\log T$$

$$\mathrm{SER} = -10\log(1 - R)$$

$$SEA = SETotal - SER$$

where A, R and T are the absorption, reflection and transmission coefficients, respectively. SE_{Total}, SE_R, and SE_A are the total, reflective, and absorptive EMI shielding effectiveness, respectively.

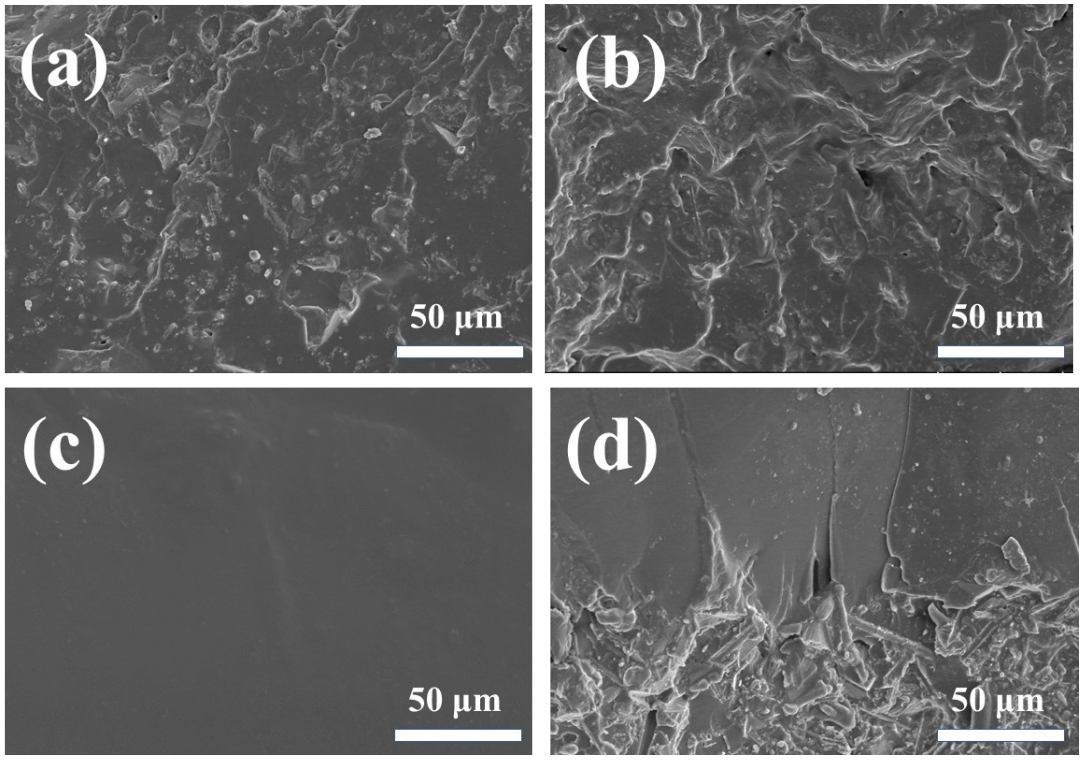

Figure S1. SEM images of cold-fractured interface morphologies close to the upper layer of T-ZnO/Ag/EP samples prepared by: (a) ISP method; (b) SB method; (c)(d) MISP method.

Table S1. Electrical conductivity on the bottom surface of EP_{T-X} systems.

System	Conductivity on the bottom surface of sample (S/m)
EP_{T-5}	5390±74
EP_{T-10}	12080±180
EP_{T-15}	18530±698
EP_{T-20}	31840±1360

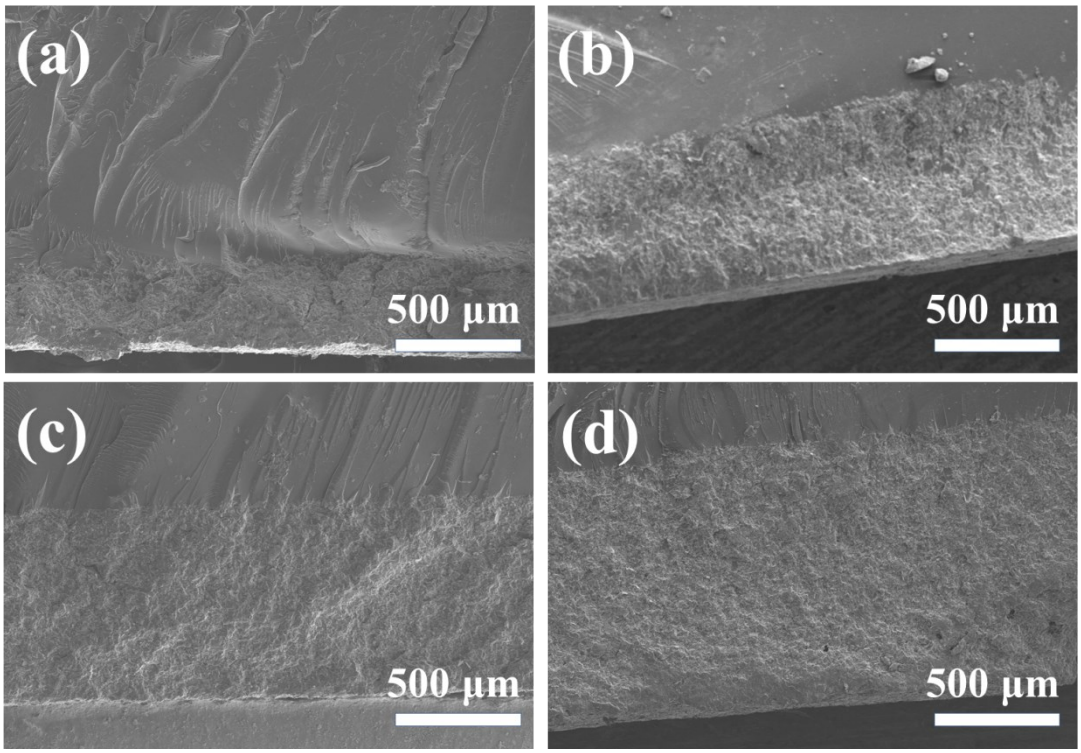

Figure S2. SEM images of the EP_{T-X} systems: (a) EP_{T-5} sample; (b) EP_{T-10} sample; (c) EP_{T-15} sample; (d) EP_{T-20} sample.

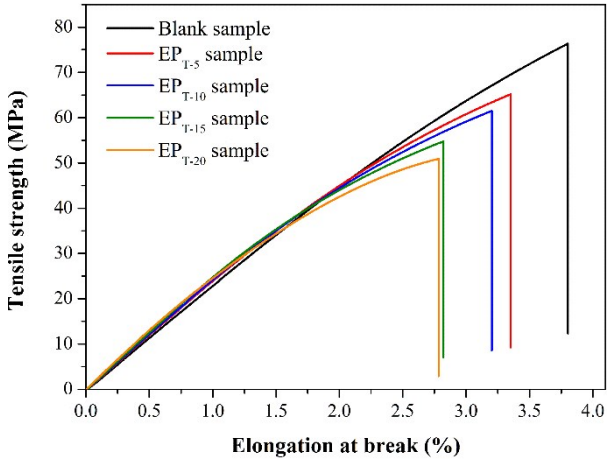

Figure S3. Strain-stress curves of blank sample and all the EP_{T-X} systems.

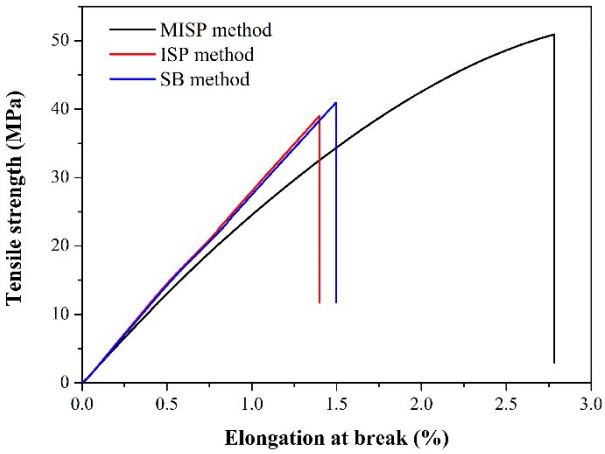

Figure S4. Strain-stress curves of T-ZnO/Ag/EP composites (with 20 wt% T-ZnO/Ag content) prepared by different processing method.