

Electronic Supplementary Information

Tuneable cellular-structured 3D graphene aerogel and its effect on electromagnetic interference shielding performance and mechanical properties of epoxy composites

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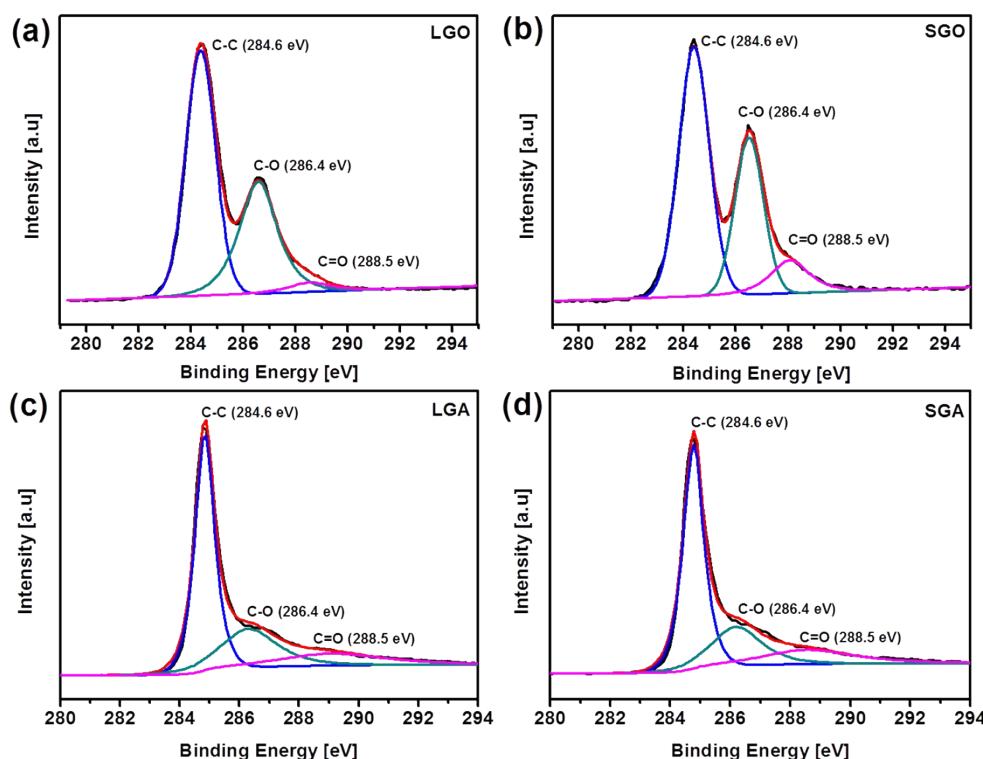


Figure S1. XPS C1s spectra of (a) LGO, (b) SGO, (c) LGA and (d) SGA

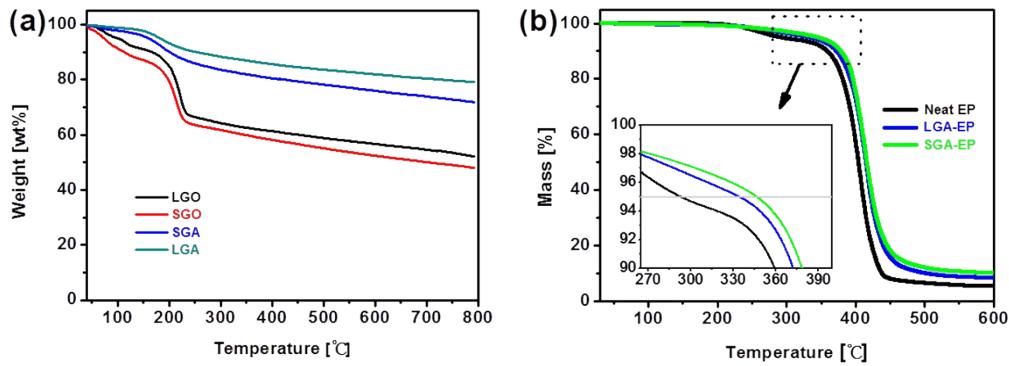


Figure S2. TGA curves of (a) various fillers and (b) neat epoxy and its composites filled with LGA and SGA.

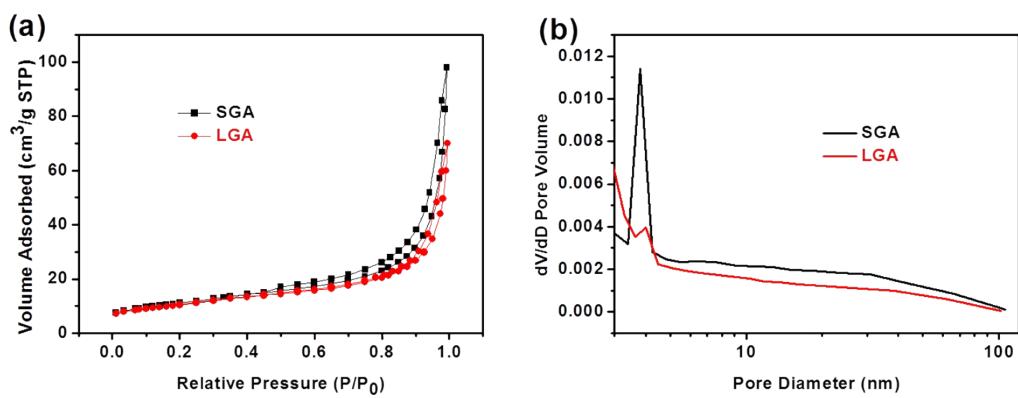


Figure S3. (a) N₂ adsorption-desorption isotherms of LGA and SGA with 37.0 and 39.8 m² g⁻¹ of specific surface areas calculated respectively by the BET method, and (b) pore size distribution of graphene aerogel with different sheet size.

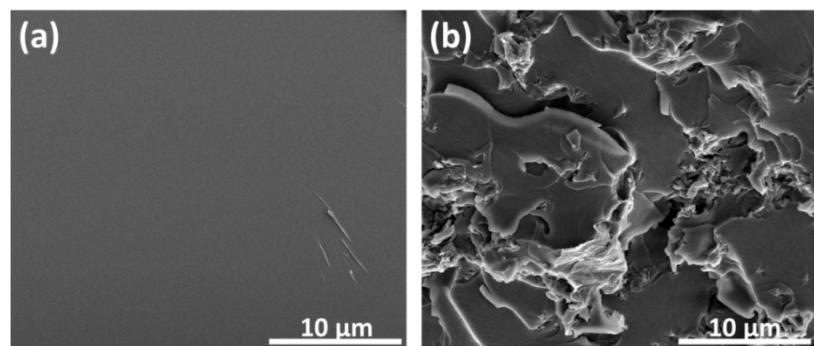


Figure S4. SEM images of fracture surface: (a) neat epoxy and (b) 1.0 wt% RGO-EP

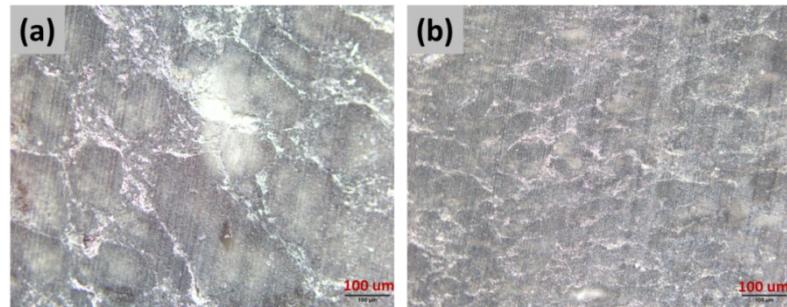


Figure S5. Transmission optical microscopy (TOM) images of epoxy composites filled with (a) LGA and (b) SGA.

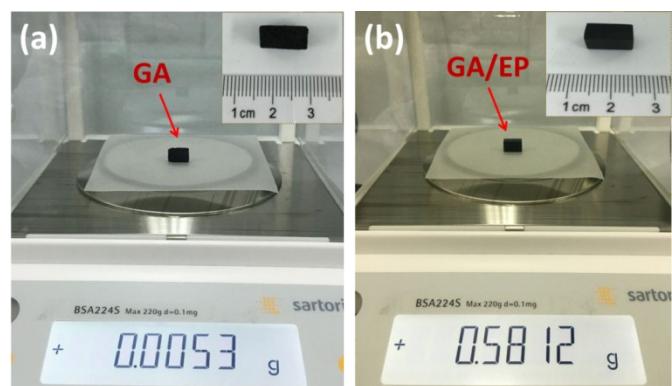


Figure S6. Comparison of mass of GA and GA-EP with the same shape and size

$$\text{Weight percent of GA in composites} = \frac{m \text{ GA}}{m \text{ Composites}} * 100\% = \frac{0.0053 \text{ g}}{0.5812 \text{ g}} * 100 \% \approx 1.0 \%$$

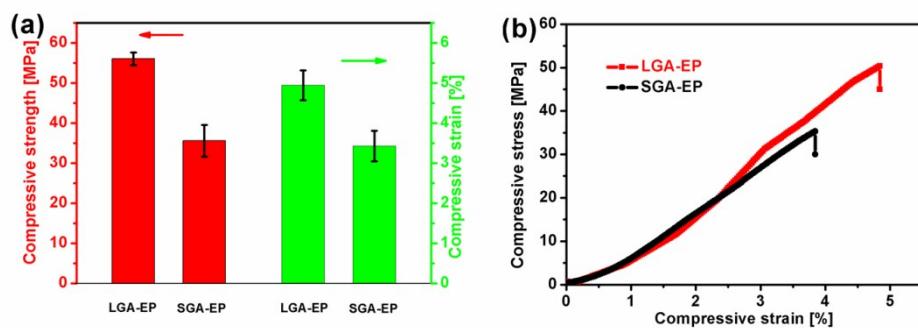


Figure S7. (a) Compressive strength and compressive strain and (b) typical compressive stress-strain

curves.

Table S1 EMI shielding performance of typical Carbon-based polymer composites at 10 GHz

Polymer composites	Filler contents (wt %)	Thickness (mm)	EMI shielding performance (dB)	Reference
PEI/graphene foam	10.0	2.3	~ 10	[1]
Graphene/epoxy	15.0	-	~ 20	[2]
Graphene/PMMA foam	1.2	4.0	~ 4	[3]
Porous graphene/PS	30.0	2.5	~ 16	[4]
Functionalized graphene/PS	7.7	3.0	~ 32	[5]
Graphene/paraffin wax	20.0	2.0	~ 21	[6]
Fe ₃ O ₄ decorated graphene/PVC	10.0	1.8	~ 10	[7]
CVD graphene aerogel /PDMS foam	0.8	3.0	~ 20	[8]
Long SWCNTs/epoxy	15.0	2.0	~ 24	[9]
Graphene aerogel/epoxy (with large graphene sheets)	~1.0	3.0	up to 30	<i>This work</i>

References

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