

Supporting information for

**Multifunctional epoxy resin-based composites with excellent
flexural strength and X-ray imaging capacity using micro/nano
structured QF-Bi₂SiO₅ fillers**

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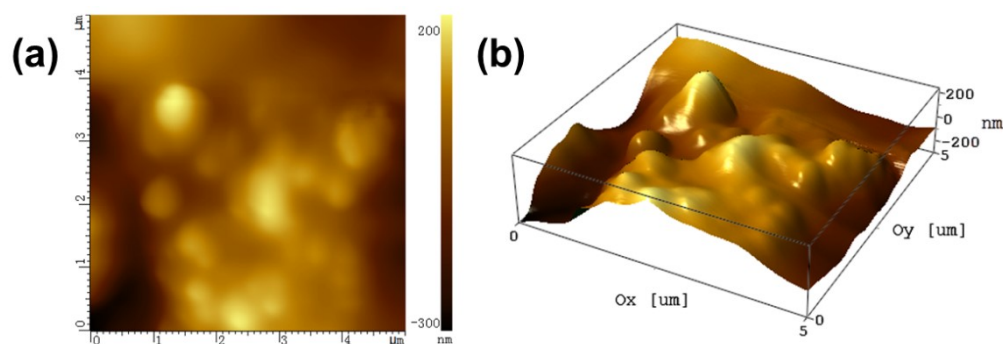


Figure S1. (a) 2D AFM image and (b) 3D AFM image of Bi₂O₃.

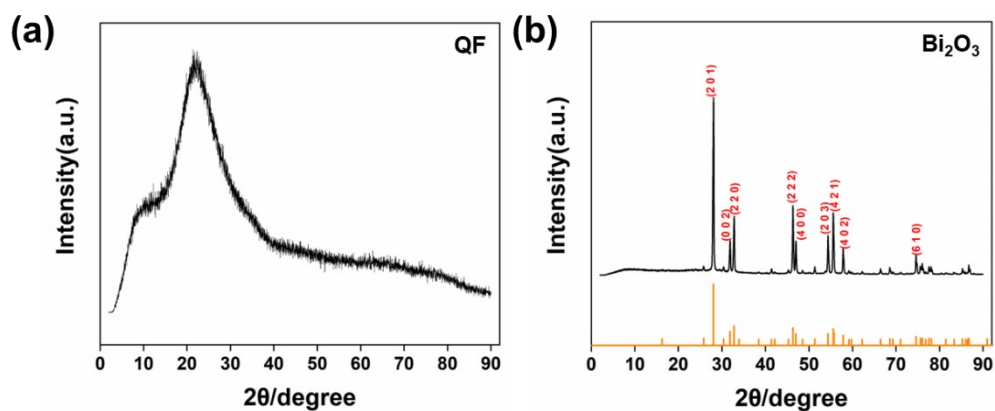


Figure S2. XRD diffraction patterns of (a) QF and (b) Bi₂O₃.

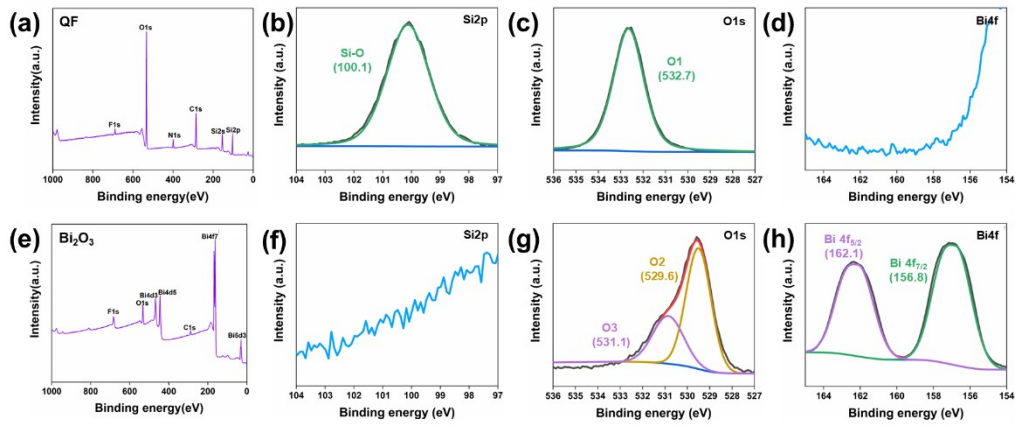


Figure S3. XPS survey scan spectra of (a) QF and (e) Bi_2O_3 . High resolution XPS spectra of Si, O, and Bi in (b–d) QF- Bi_2O_3 and (f–h) QF- Bi_2SiO_5 .

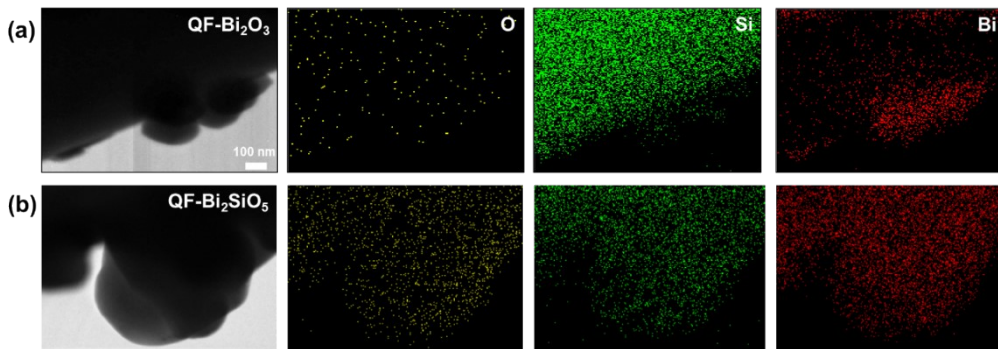


Figure S4. TEM images and elemental mapping of (a) QF- Bi_2O_3 and (b) QF- Bi_2SiO_5 .

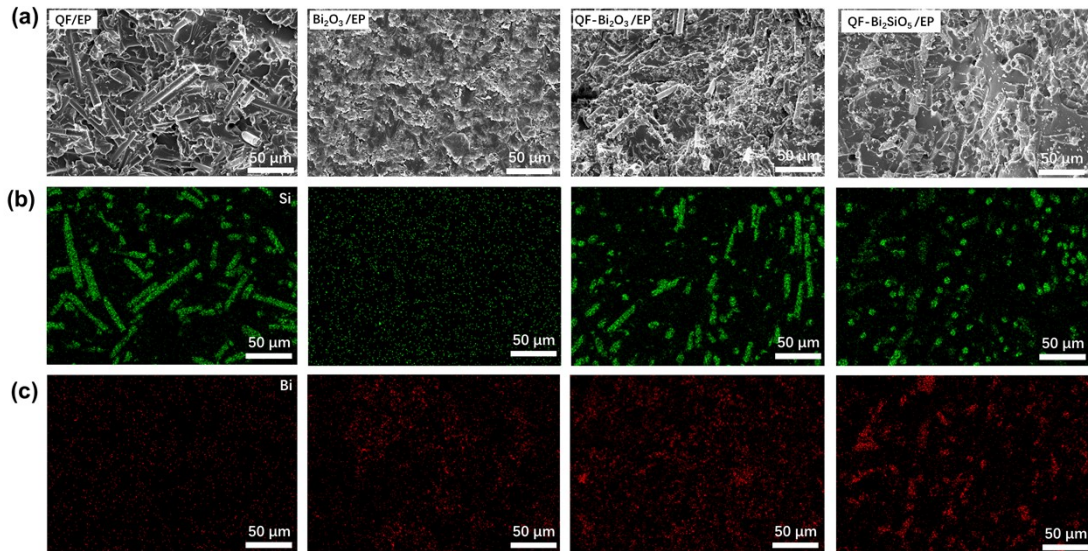


Figure S5. (a) SEM images at low magnification of different composites; (b) EDX elemental mapping of (b) silicon and (c) bismuth based on above SEM images.

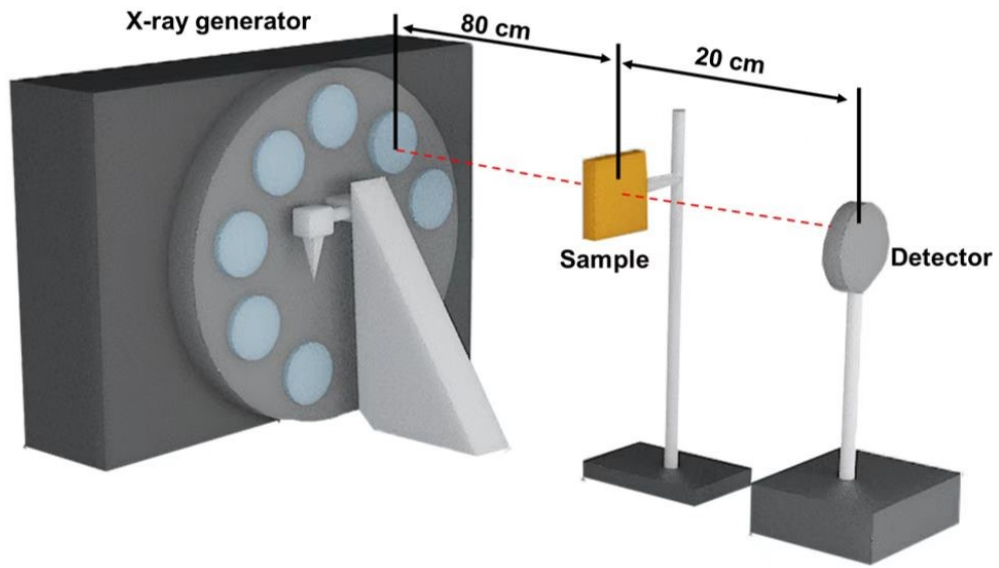


Figure S6. Test devices and method of X-ray radiopacity.

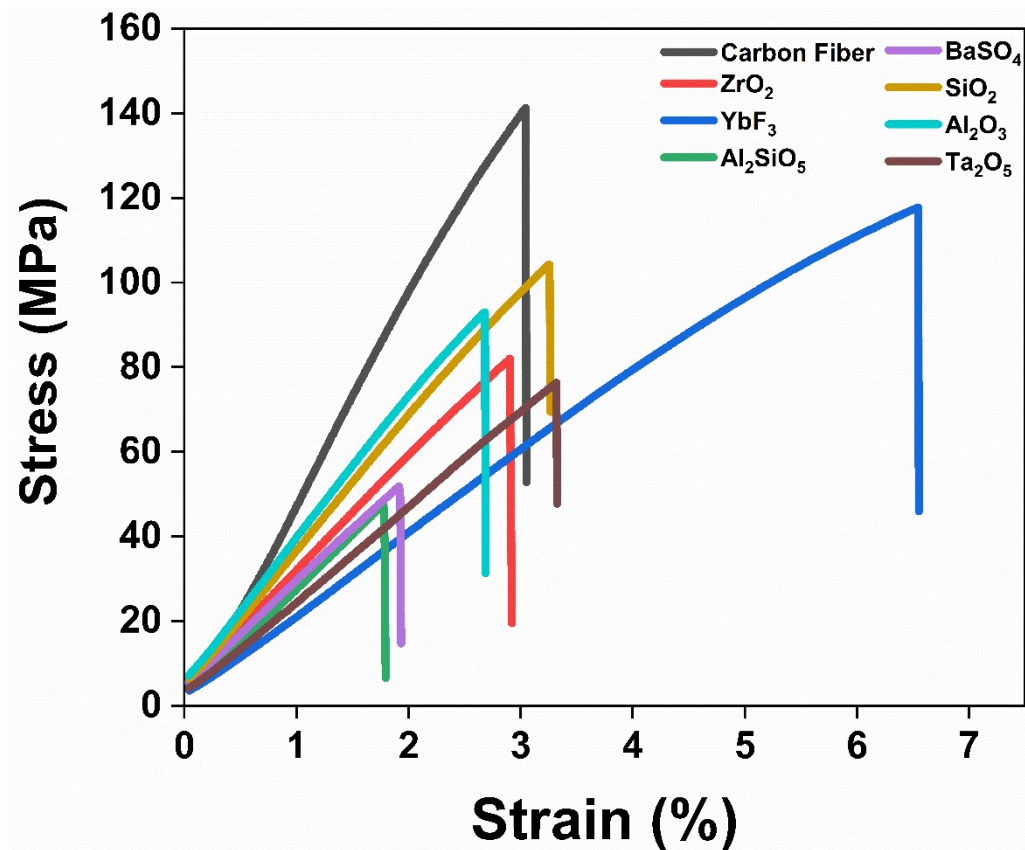


Figure S7. Stress-strain curves of different composites.

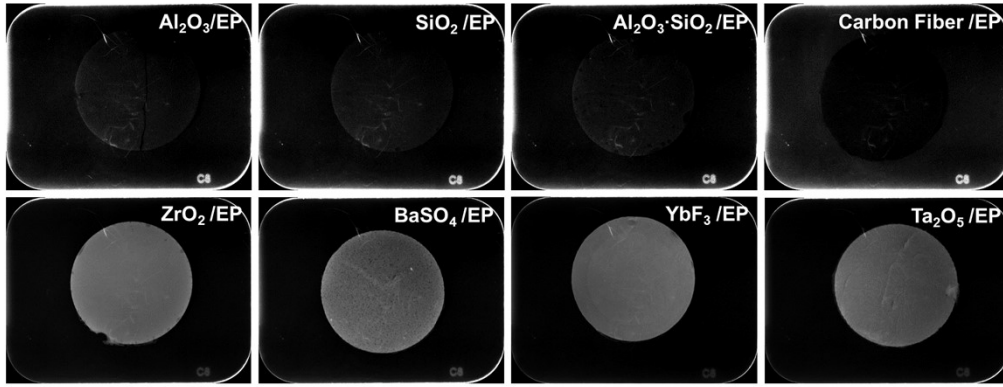


Figure S8. Digital radiographs of the samples photographed by the X-ray machine.

Table S1. The area of each peak in the O1s spectra

Filler	Peak area			O3 ratio
	O1	O2	O3	O3/(O1+O2+O3) * 100%
QF-Bi ₂ O ₃	136630	29127	17296	9%
QF-Bi ₂ SiO ₅	66779	72862	30838	18%