

Highly conductive PBFDO-based multifunctional composite for electromagnetic interference shielding, thermal management, and sensing

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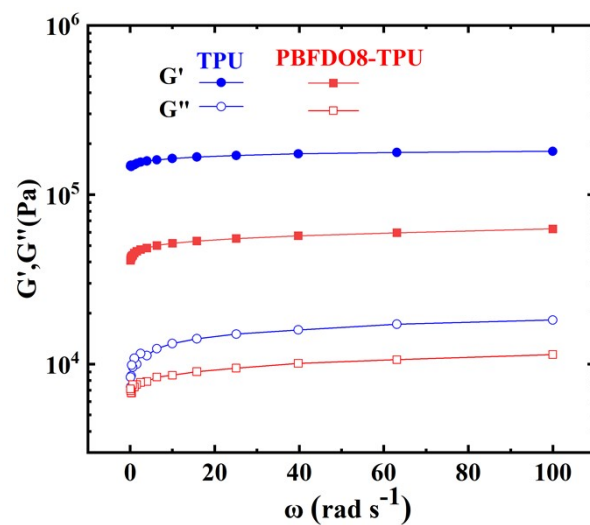


Fig. S1 Frequency-dependent storage modulus (G') and loss modulus (G'') of TPU and PBFDO8-TPU composites

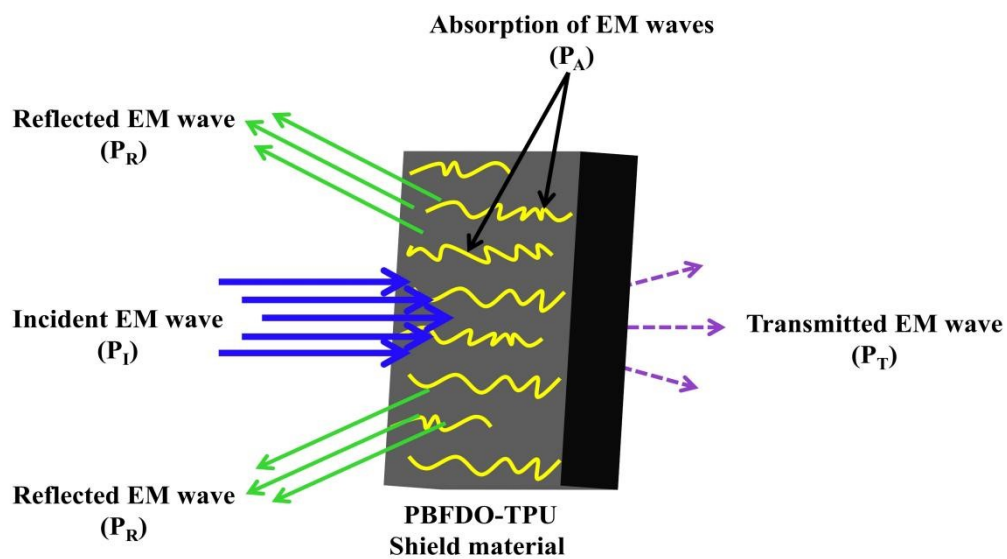


Fig. S2 Diagram of EMI shielding mechanism

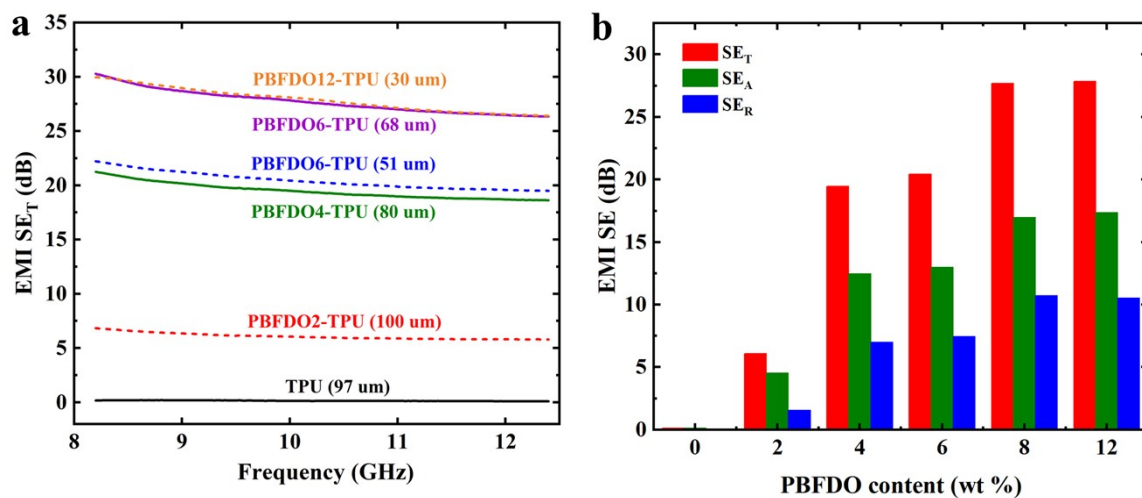


Fig. S3 EMI shielding performances of the thinner PBFDO-TPU conductive composites. (a) EMI SE curves of the PBFDO-TPU conductive composites in the X-band; (b) Comparative bar chart illustrating the SE_T, SE_R, and SE_A of the PBFDO-TPU conductive composites.

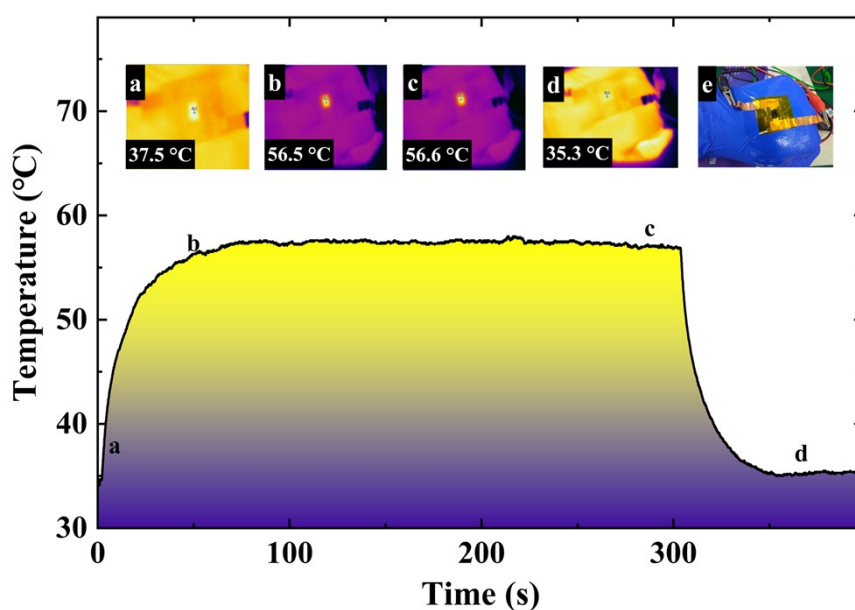


Fig. S4 The PBFDO8-TPU Joule heater is affixed to the hand heating Joule heating curve: (a~d) correspond to infrared imaging at various points along the Joule heating curve; (e) presents an electronic photograph of the Joule heater.

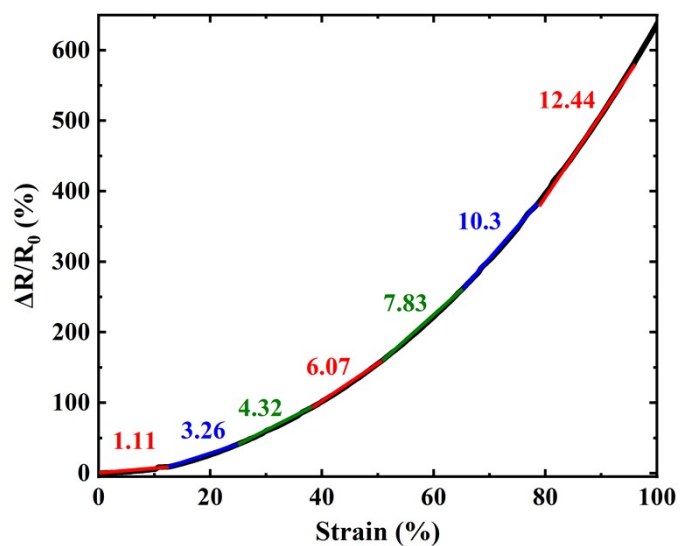


Fig. S5 The relationship curve depicting the rate of resistance change in the PBFDO4-TPU sensor as a function of strain, along with the corresponding sensitivity.

Table S1 R_H of PBFDO-TPU conductive composites

Sample	Fraction of peak area		R_H
	Bonded C=O	Free C=O	
TPU	0.428	0.572	0.75
PBFDO2-TPU	0.617	0.383	1.61
PBFDO4-TPU	0.677	0.323	2.10
PBFDO8-TPU	0.749	0.251	2.98
PBFDO12-TPU	0.765	0.235	3.26

Table S2 Conductivity of highly conductive composites

Materials	Conductive filler content (wt %)	Conductivity (S cm ⁻¹)	Reference
TPU/PEDOT:PS	40%	185	1
TPU/MWCNT	10%	0.124	2
PAR/MWCNT	20%	0.358	3
TPU/AgNWs	24.1%	147	4
TPU/S-AgNWs	24.4%	331	4
TPU/PBFDO	12%	312	This work

Reference

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