Supplementary Information

Dissipation Enhancement Effect from Titania Semiconductor Modulation of Graphene-based Electromagnetic Absorbing Composites

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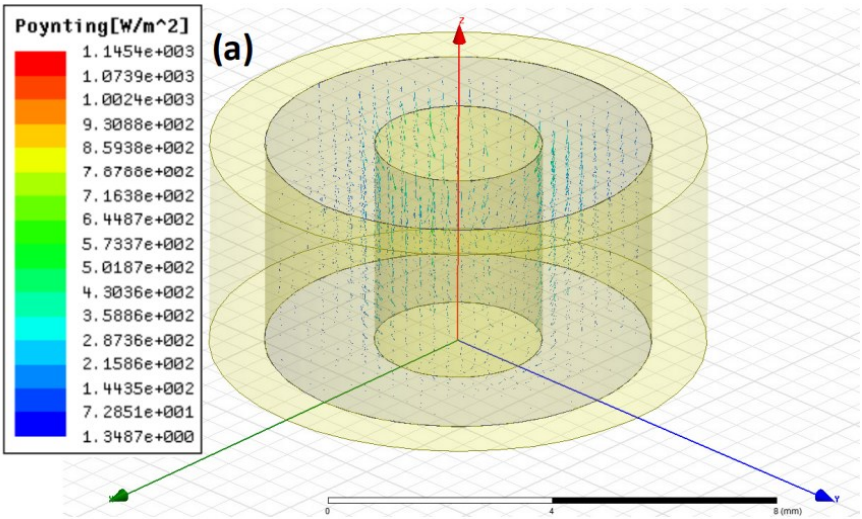

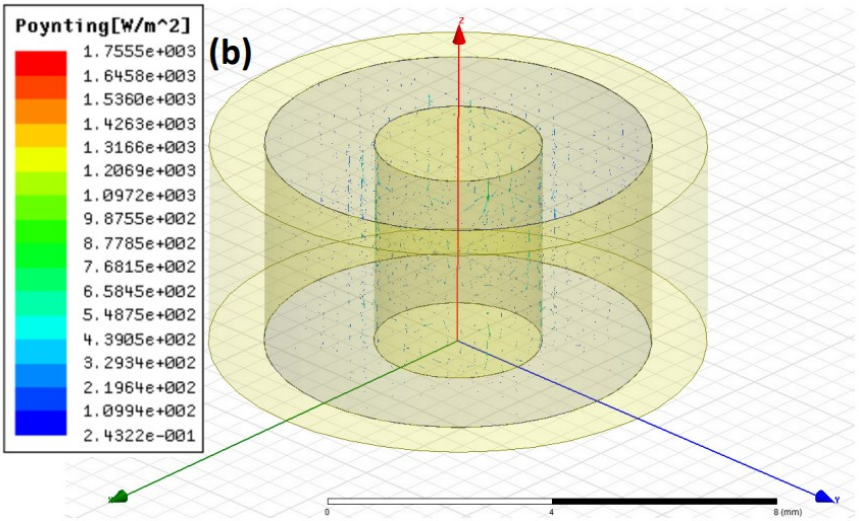

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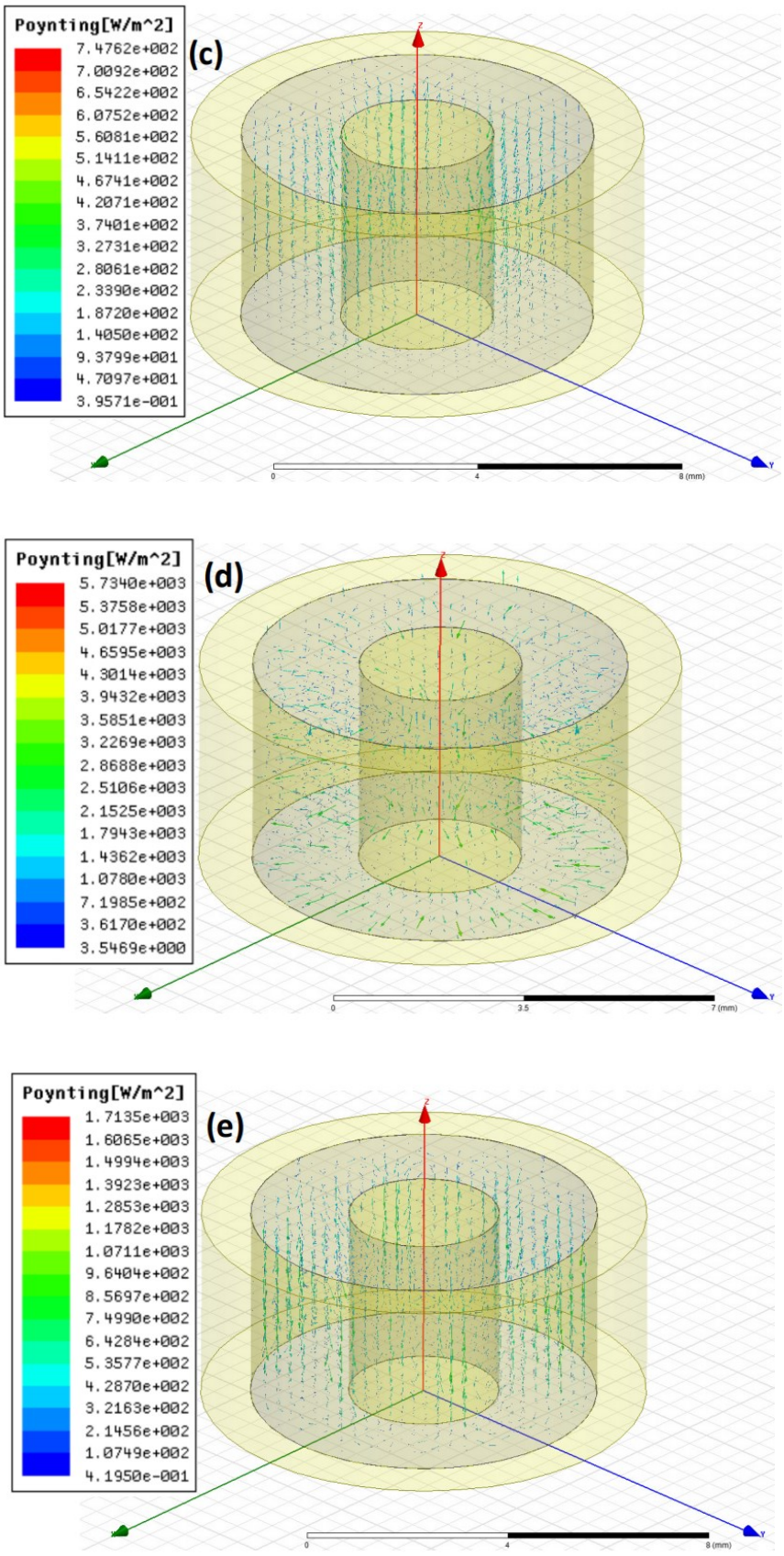

Figure S1 Energy flux density of electromagnetic wave in absorber. (a)GM (Exfoliated GNS and manganese oxides 1:1) , (b) GMT10, (c)GMT30, (d)GMT50, and (e) GT composite samples. See online version for color display.

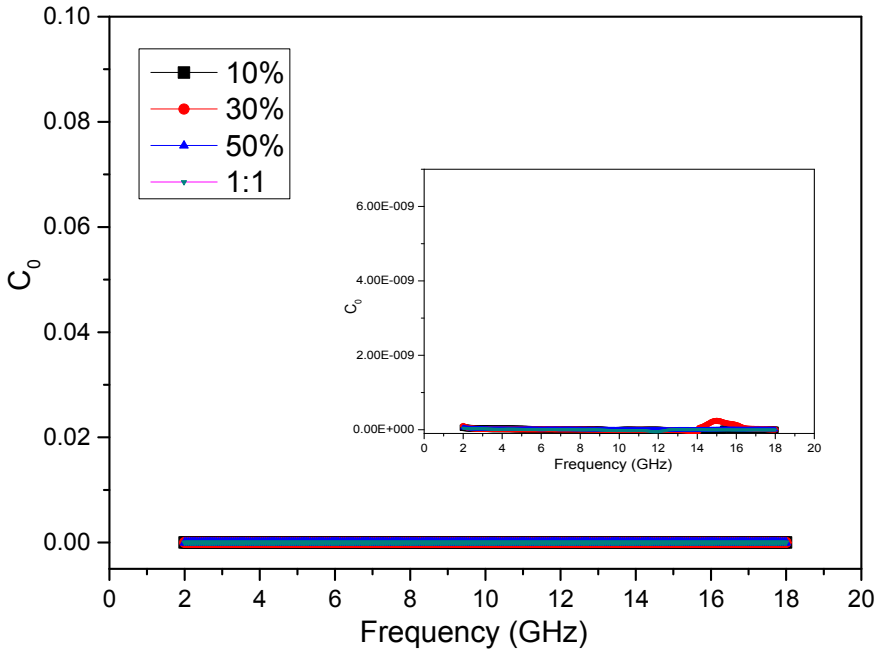

Figure S2 Eddy current coefficient C_0 of composite samples with addition of titania. To display different sample curves as much as possible, the symbols are set in different sizes. The inset figure with a scale in very small magnitude of E-9 to E-10 shows some differences in high resolution. Though there are tiny waves in the high frequency end for C_0, which are almost constant in the main range.

Table S1 Increment of semiconductor titania introduction to electromagnetic type composites

Thickness 4mm / EM component / Modulation components / Reflection loss(dB)	Magnetic graphene	Magnetic graphene @PANI	$ZnFe_2O_4$	$ZnFe_2O_4$@graphene	GNS-EMO
Before titania introduction	~20(HF)	~18(LF)	~4.25	~13.65(LF)|8.5(HF)	4.78(HF)
@TiO_2	~25(HF)	~9(LF)	—	~31(LF)|12.5(HF)	9.91(HF)
Loss increment(dB)	5(HF)	-9 (LF)	—	17.35(LF)|4.5(HF)	5.13(HF)
Ref.	[28]			[32]	This work

HF and LH refer to high frequency and low frequency end, respectively.