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Ultra-strength Polyurethane/MOF-deriver Composites for Self-Healing, and Recycling Capabilities and Highly Efficient Microwave Absorption

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Samples	PTMG-1000	HDI	ABBA
P_3H_4-B_3O_3	3	4	2
P_6H_7-B_3O_3	6	7	2
P_9H_{10}-B_3O_3	9	10	2
$P_{12}H_{13}$-B_3O_3	12	13	2

Table S1. The molar ratios of PTMG-1000, HDI and ABBA monomers Molecular of P_xH_y-B_3O_3 .

Samples	PTMG-1000	HDI	Methanol anhydrous	Mn	PDI
P_3H_4-M	3	4	2	5095.26	3.040088
P_6H_7-M	6	7	2	7884.50	3.653912
P_9H_{10}-M	9	10	2	12904.74	2.109654
$P_{12}H_{13}$-M	12	13	2	14299.61	2.200273

Table S2. Molecular weight and polydispersity index (PDI) of various PxHy-M polymers

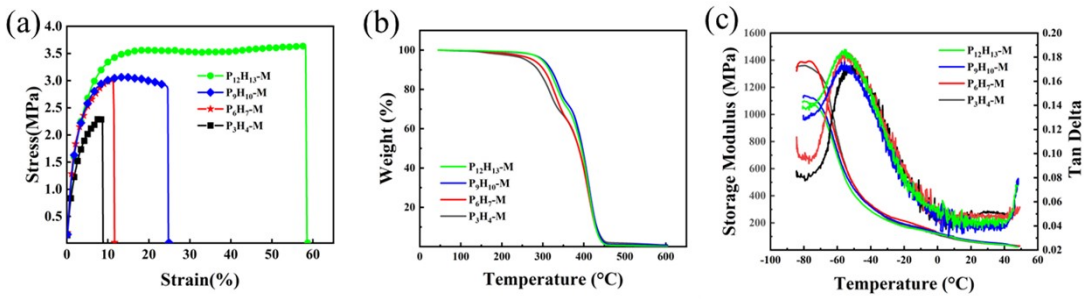

Fig. S1. (a) Stress–strain curves, (b) TGA and (c) DMA of P_xH_y-M

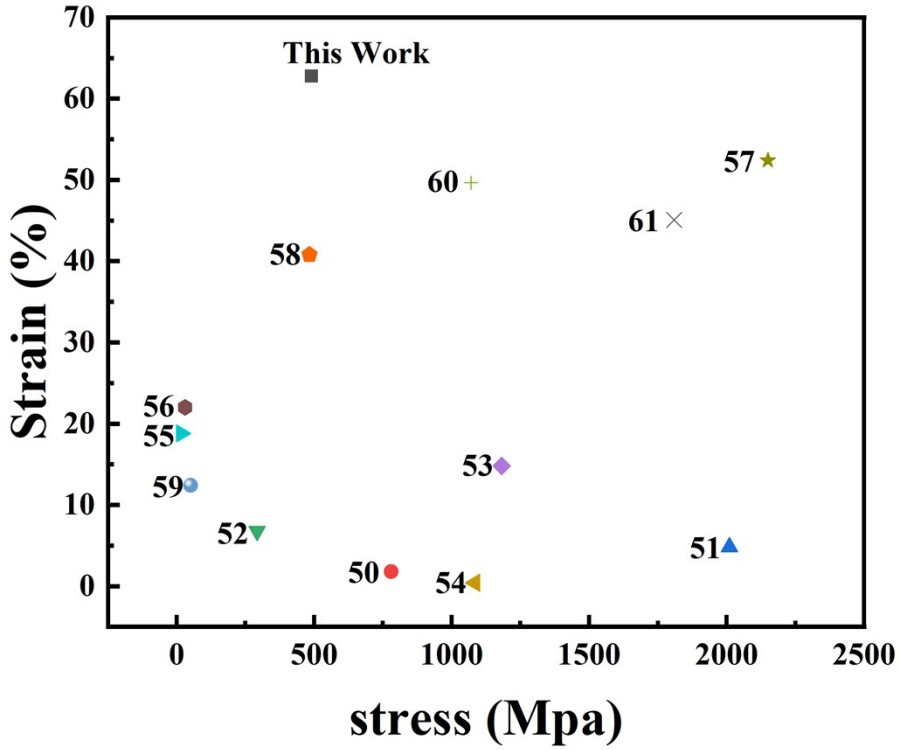

Fig. S2. Comparison of the tensile strength and stress of the P_6H_7-B_3O_3 thermosets, polyurethane reported in literature.

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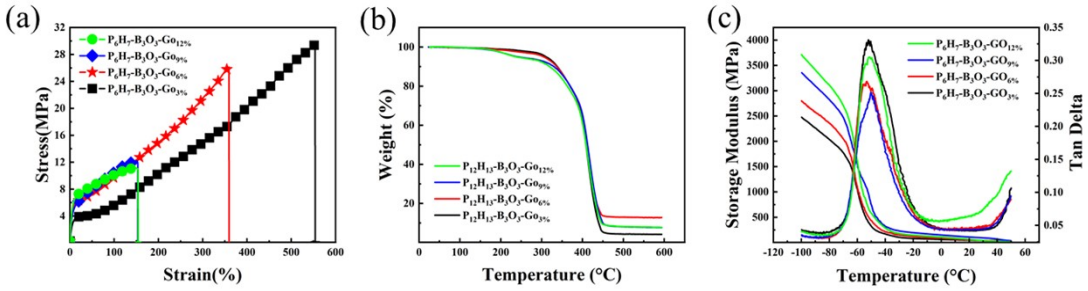

Fig. S3. (a) Stress–strain curves, (b) TGA and (c) DMA of P_6H_7-$Go_{X\%}$

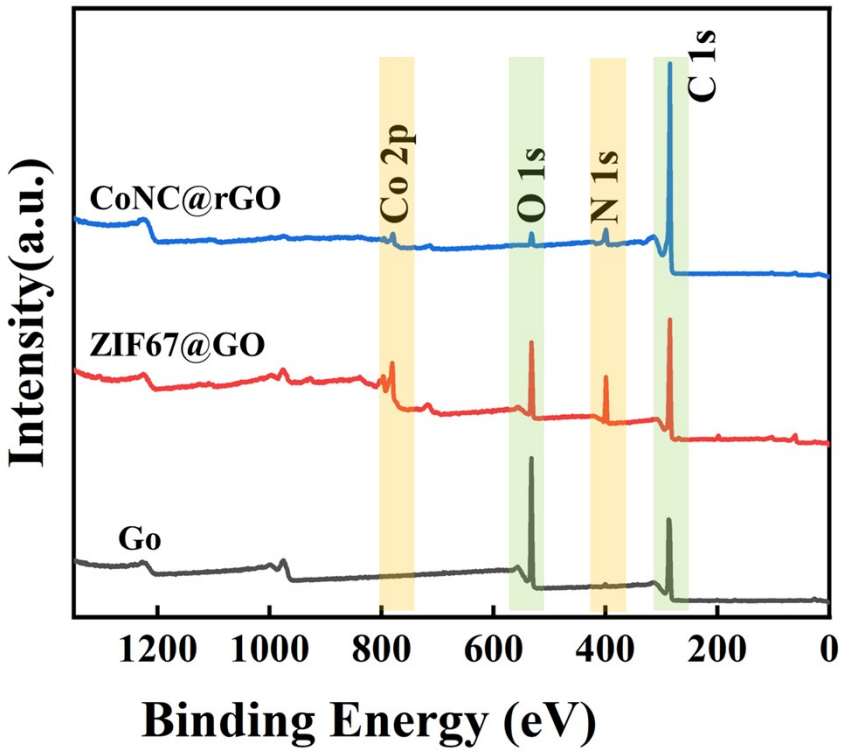

Fig. S4. The total XPS spectrum **of Go, ZIF67@Go and CoCN@rGo.**

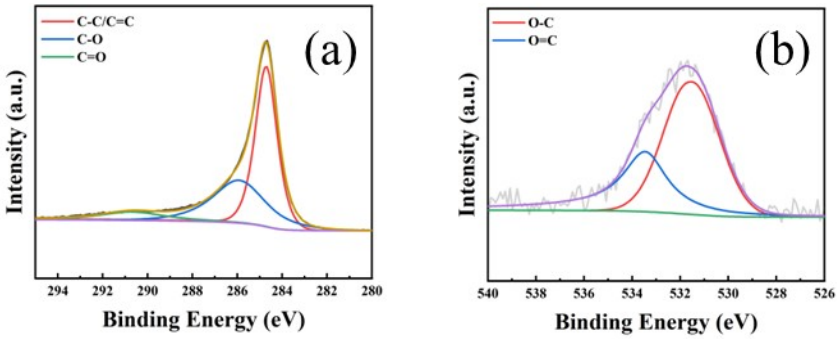

Fig. S5. XPS spectra of CoNC@rGO.

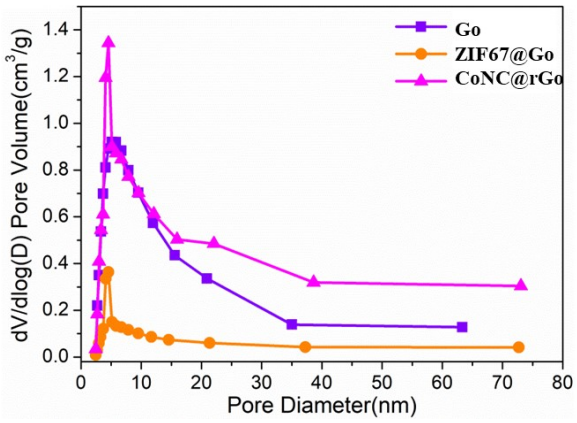

Fig. S6. Pore size distribution of Go, ZIF67-Go and CoNCGo .

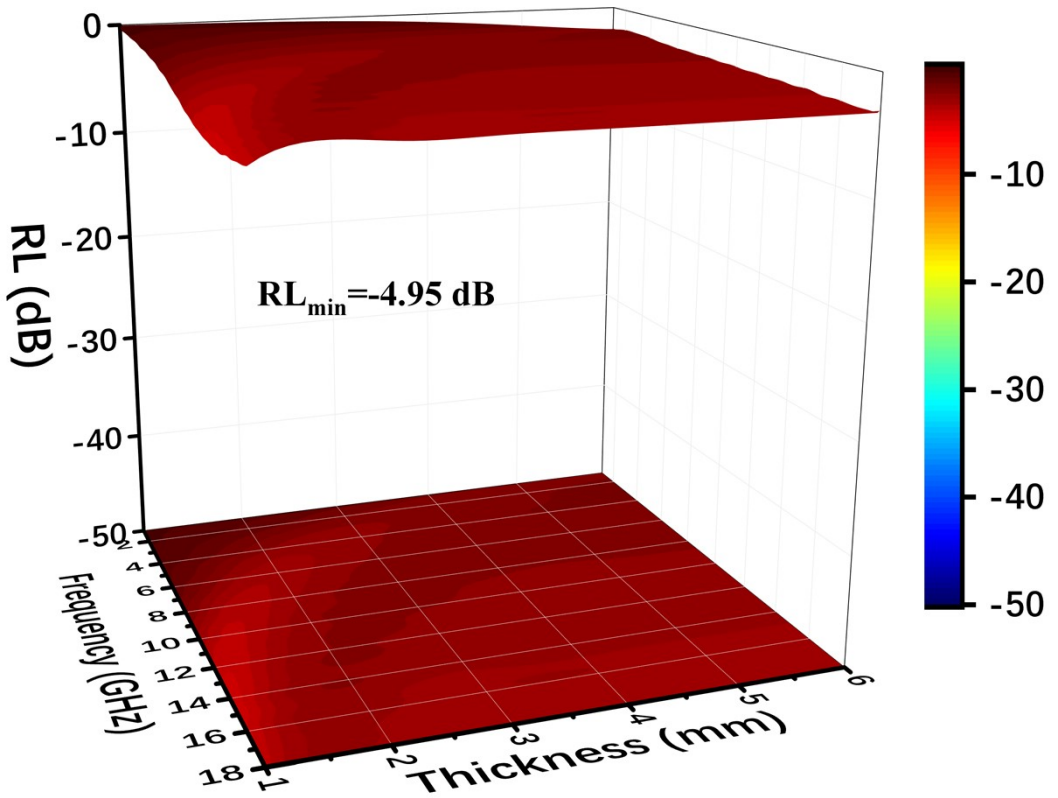

Fig. S7. 3D diagrams of reflection loss for P_6H_7-B_3O_3- $GO_{6\%}$

Material	Minimum reflection loss (dB)	Filler Loading (wt%)
Co@ZnO/Ni@NC 1	-55	27
rGO-CoFe@C 2	-36.08	10
Fe_2O_3@ZnCo-MOF 3	-44.13	30
CoNC@GN/PCL/TPU 4	-29.8	4
CoNC@CF-PLA 5	-45.5	10
Ni@NC-nanoflakes 6	-52.88	30
Gmfs 7	-42.9	10
$Ni_{0.6}Zn_{0.4}Fe_2O_4/SrFe_{12}O_{19}$ 8	-25.9	80
$LaFe_{0.1}Co_{0.9}CO_3$ 9	-38.99	3
This work	-47.1	6

Table S3. Comparison of filler loading and EMW performance of literatures.

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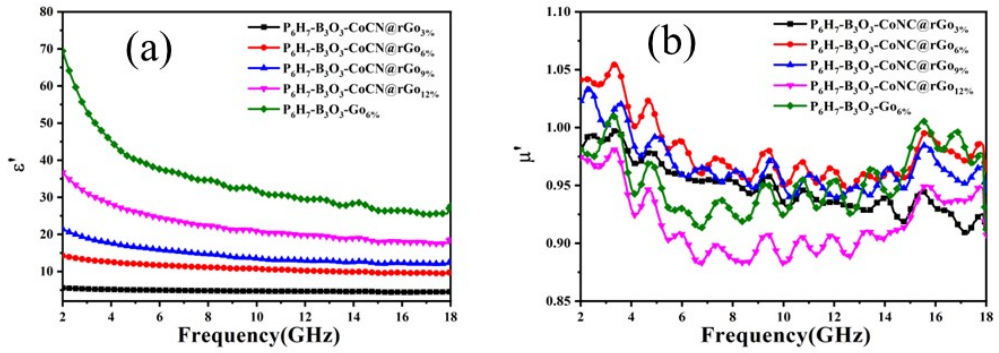

Fig. S8. (a) Real parts of complex permittivity. (b) Real parts of complex permeability.

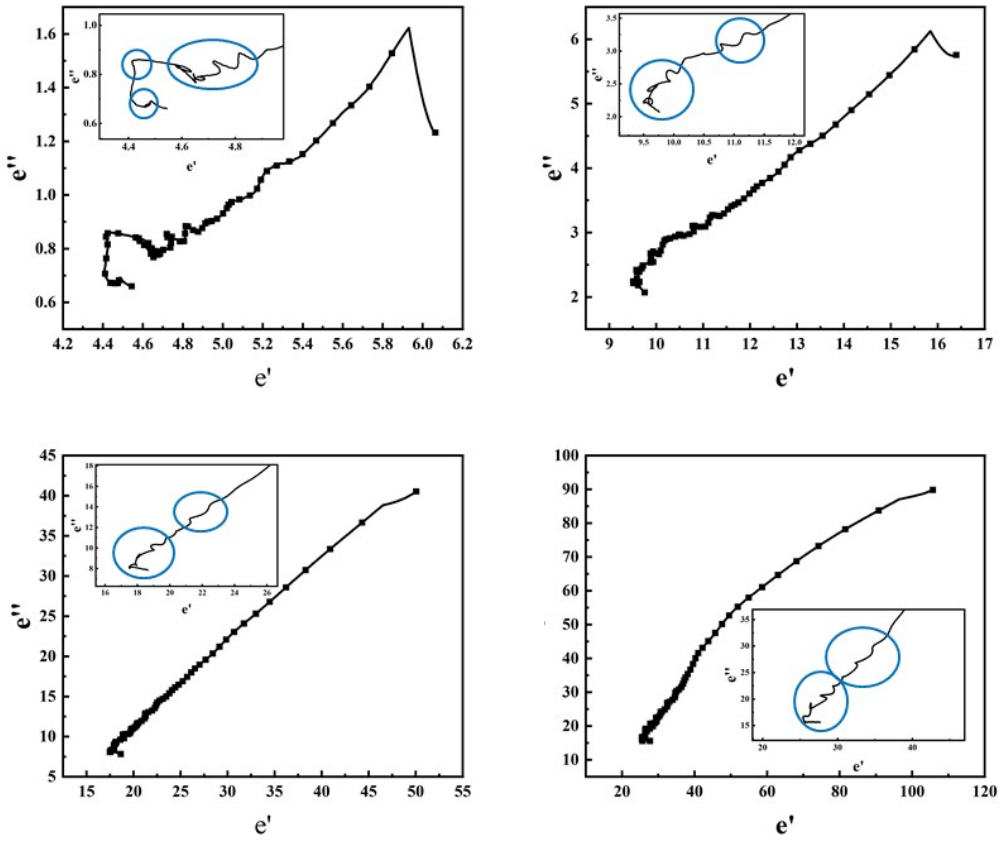

Fig. S9. The Cole-Cole Circles of (a) P_6H_7-B_3O_3-CoNC@rGo3%, (b) P_6H_7-B_3O_3-CoNC@rGo9%, (c) P_6H_7-B_3O_3-CoNC@rGo12% and P_6H_7-B_3O_3- Go6%