

Supplementary Material

Novel Polyvinyl Alcohol/Polyacrylic Acid Hydrogels Achieve Excellent

Electromagnetic Shielding by Modifying CNTs

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Table S1 Thermogravimetric data table of composite hydrogels with different K-CNTs mass ratios

Samples	T _{5%} /°C	T _{10%} /°C	T _{50%} /°C	T _{1DTG peak} /°C	T _{2DTG peak} /°C	Carbon residue rate/%
PVA/PAA/K-0-CNTs	143.01	280.45	377.03	363.64	433.96	7.32
PVA/PAA/K-0.5-CNTs	76.55	129.88	375	367.30	449.10	12.03
PVA/PAA/K-1-CNTs	117.53	278.08	390.55	371.43	447.79	22.05
PVA/PAA/K-1.5-CNTs	90.9	239.43	395.96	365.06	448.44	27.24

Table S2 Thermogravimetric data table of composite hydrogels with different S-CNTs mass ratios

Samples	T _{5%} /°C	T _{10%} /°C	T _{50%} /°C	T _{1DTG peak} /°C	T _{2DTG peak} /°C	Carbon residue rate/%
PVA/PAA/S-0-CNTs	143.01	280.45	377.03	363.64	433.96	7.32
PVA/PAA/S-0.5-CNTs	104.90	303.24	376.88	362.38	448.23	18.93
PVA/PAA/S-1.0-CNTs	125.83	283.12	364.42	348.10	443.58	28.66
PVA/PAA/S-1.5-CNTs	132.34	255.23	334.73	334.45	442.09	23.57

Table S3 EMI SE_T versus thickness of different EMI shielding materials

Materials	Thickness (mm)	EMI SE (dB)	References
PVA/PAA/K-0.5-CNT	1	28.89	This work
M@T/PAM-4	3.2	29	1
Fe ₃ O ₄ @RGO- 4 hydrogel	3	27.1	2
PCGM5	5	46.3	3
MBHG ₂	/	24.8	4
PVA-PEG-SA-Na ⁺ hydrogels	2	32.64	5
CNF@LM/PAM/rGO hydrogels	1	14.2	6
PVA/PAA/MXene hydrogels	2	33.6	7
PAM/MXene@CNF/CaCl ₂ hydrogels	4	33.8	8
P(AM-co-AA) hydrogels	2.5	37	9

Table S4 Composition and Key Performance Parameters of PVA/PAA/CNTs Hydrogels with Different Modifiers and CNTs Content

Modifier Type	CNTs content (wt%)	Elongation at break (%)	EMI SE (dB)	T _{max} (°C)	Carbon residue rate/%
Unmodified	0	163.1	11.09	433.96	7.32
KH550(K-CNTs)	0.5	282.9	28.89	449.10	12.03
KH550(K-CNTs)	1.0	233.89	19.11	447.79	22.05
KH550(K-CNTs)	1.5	203.99	18.12	448.44	27.24
SDBS(S-CNTs)	0.5	181.06	22.82	448.23	18.93
SDBS(S-CNTs)	1.0	176.14	24.18	443.58	28.66
SDBS(S-CNTs)	1.5	201.65	26.22	442.09	23.57

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