Electronic Supplementary Material (ESI) for RSC Advances

Supporting Information

The calculation about the loading of the Ag NPs

$$\frac{\Delta m}{m_0} = \frac{m - m_0}{m_0} = \frac{0.08\% - 0.03\%}{0.03\%} = 1.66$$

Where, m_0 is the loading of the Ag NPs onto the Ag NPs/PVDF composite, i.e. the atomic concentration of Ag in the Ag NPs/PVDF composite by XPS; m is the loading of the Ag NPs onto the Ag NPs/MWCNTs/PVDF composite, i.e. the atomic concentration of Ag in the Ag NPs/MWCNTs/PVDF composite by XPS.

Table S1. D- and G-bands shifts and Raman I_D/I_G intensity ratios of purified MWCNTs, MWCNTs/PVDF and Ag NPs/MWCNTs/PVDF composites.

Sample	D-band [cm^{-1}]	G-band [cm^{-1}]	I_D/I_G
purified MWNTs	1352	1585	0.88
MWNTs/PVDF	1353	1586	1.03
AgNPs/MWNTs/PVDF	1353	1586	1.31

Table S2. DSC parameters of the PVDF, Ag NPs/PVDF, MWCNTs/PVDF and Ag NPs/MWCNTs/PVDF composites

Sample	△Hm [J/g][a)]	△Hc [J/g][b)]	Tm [℃][c)]	Tc [℃][d)]	Xc [%][e)]
PVDF	50.96	37.35	162	139	48.72
MWCNTs/PVDF	25.71	21.00	162	139	24.58
Ag NPs/PVDF	45.64	34.81	162	139	43.63
Ag NPs/MWCNTs /PVDF	25.53	21.80	162	140	24.41

[a)]the melting enthalpy of the first heating trace; [b)]the crystallization enthalpy of the cooling trace; [c)]the melting peak temperature; [d)]the crystallization temperature; [e)]the degree of mass crystallinity

To derive the information of sample crystallinity from the DSC results, the degree of mass crystallinity (X_c) was calculated from the melting enthalpy of the second heating trace ($\triangle H_m$) with the following Equation 1:

$$X_C(\%) = \frac{\Delta H_m}{\Delta H_0} \quad (1)$$

where $\triangle H_0$=104.6 J/g was the heat of fusion for 100% crystalline PVDF.

Table S3. The T_i, T_{max} and Weight loss rate at T_{max} observed from **Figure S1**

Samples	T_i [℃][a)]	T_{max} [℃][b)]	Weight loss rate at T_{max} (%)
PVDF	405.98	486.49	53.26%
MWCNTs/PVDF	346.15	484.97	36.89%
Ag NPs/ PVDF	368.27	478.87	39.78%
AgNPs/MWCNTs/PVDF	359.80	479.63	36.51%

[a)]the initial degradation temperature; [b)]the temperature at the highest degradation rate

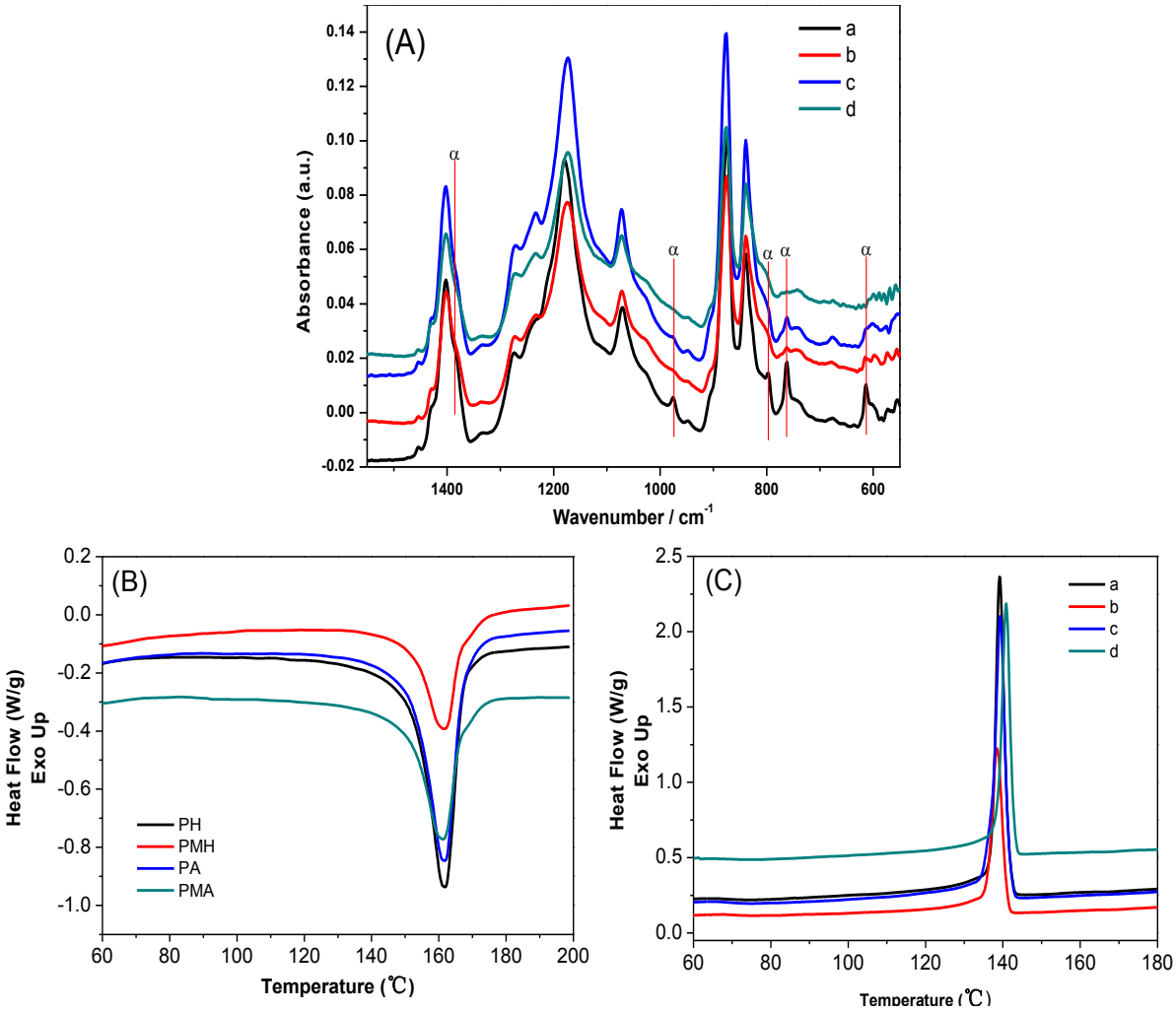

Fig. S1 FTIR spectra(A) and DSC heating (B) and cooling (C) curves of the PVDF(a), MWCNTs/PVDF(b), Ag NPs/PVDF(c) and Ag NPs/MWCNTs/PVDF(d) composites.

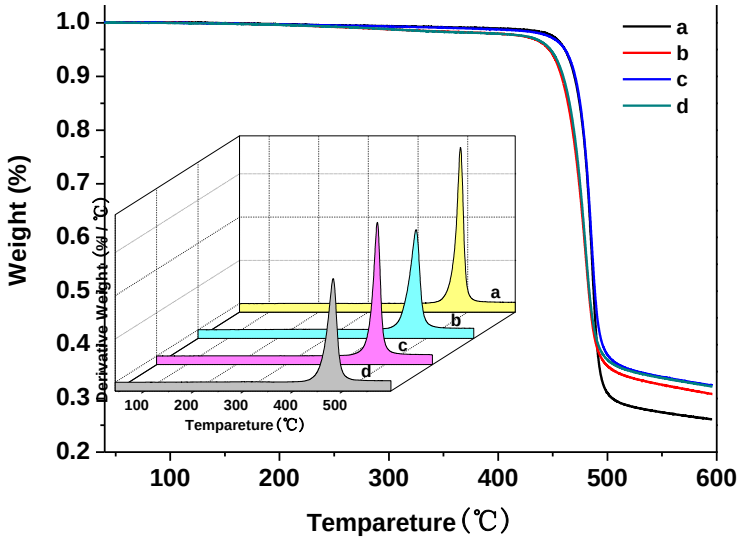

Fig. S2 TG and derivative TG (inset) curves of the PVDF(a), Ag NPs/ PVDF(b), MWCNTs/PVDF(c) and Ag NPs/ MWCNTs/PVDF(d) composites.