Electronic Supplementary Material (ESI) for RSC Advances.

Magnetoelectric investigations on Poly (vinylidene fluoride)/$NiFe_2O_4$ flexible films fabricated through solution casting method

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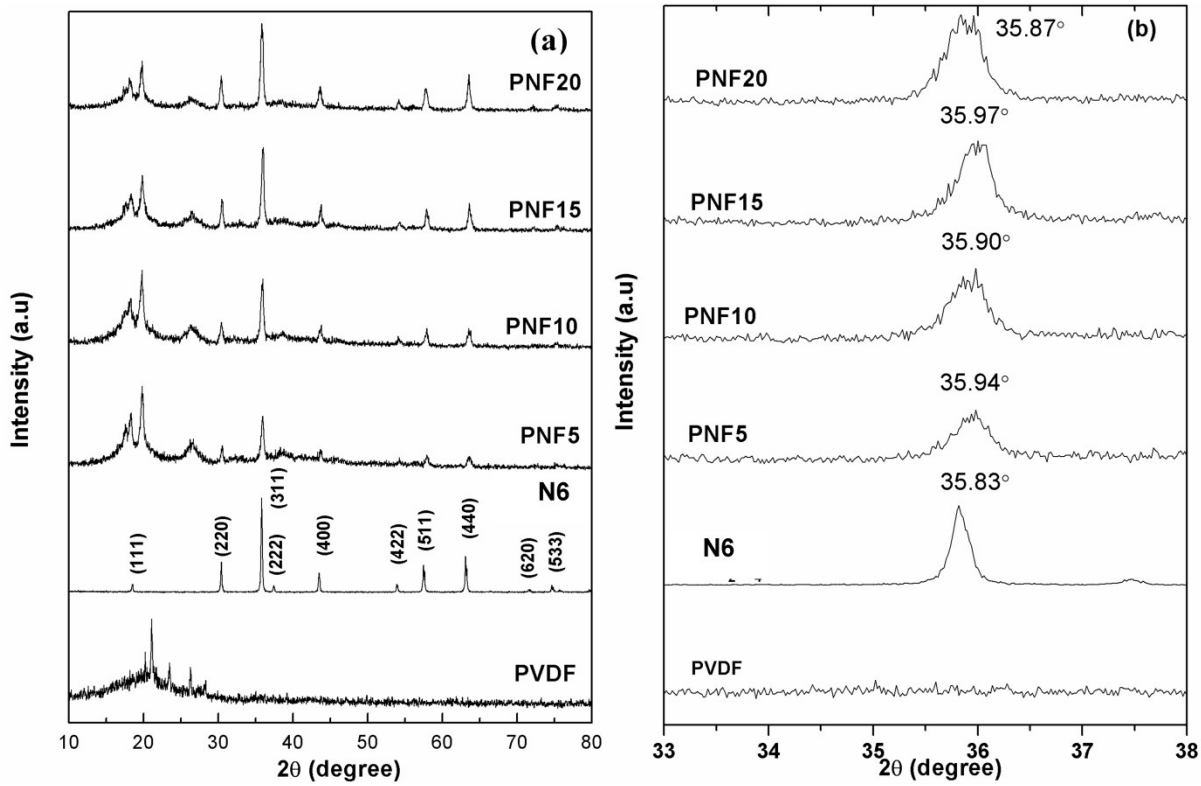

Fig.Es.1 (a) X-ray diffraction pattern of $NiFe_2O_4$, PVDF and PVDF/$NiFe_2O_4$ composite films and (b) Shift of (311) plane of $NiFe_2O_4$ in PVDF matrix.

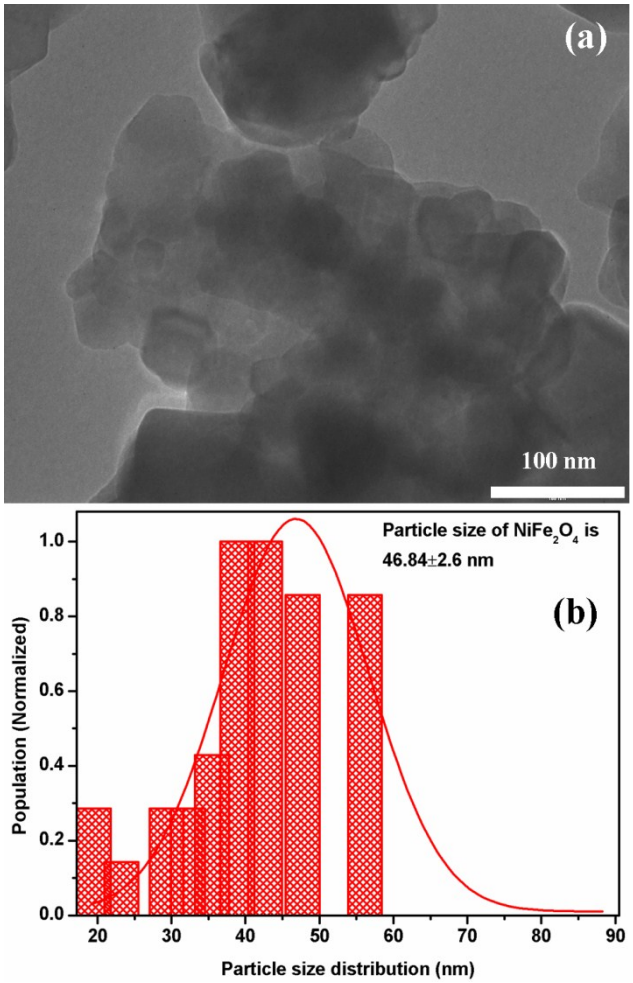

Fig.Es.2 (a) TEM and (b) particle size distribution of $NiFe_2O_4$ nanoparticles

Table Es.1. List of absorption bands and the assignment of functional groups

Sample	Wave number (cm^{-1})	Assignment	F(β) %
PVDF	762	CF_2 bending and skeletal bending of α	37.2
	795.0	CH_2 rocking of α	
	838.9	CH_2 rocking of β	
	853.9, 871.2, 974.4	C-H out of plane bending of α phase	
	1067.5	C-C anti-symmetric stretching of β	
PNF5	762.2	CF_2 bending and skeletal bending of α	31.4
	794.5	CH_2 rocking of α	
	841.8	CH_2 rocking of β	
	854.3, 869.7, 974.8	C-H out of plane bending of α phase	
	1066.9	C-C anti-symmetric stretching of β	
PNF10	762.2	CF_2 bending and skeletal bending of α	35.9
	794.5	CH_2 rocking of α	
	839.9	CH_2 rocking of β	
	855.3, 869.7, 974.4	C-H out of plane bending of α phase	
	1066.9	C-C anti-symmetric stretching of β	
PNF15	762.2	CF_2 bending and skeletal bending of α	33.2
	795.0	CH_2 rocking of α	
	841.8	CH_2 rocking of β	
	853.8, 869.7, 974.4	C-H out of plane bending of α phase	
	1066.9	C-C anti-symmetric stretching of β	
PNF20	762.2	CF_2 bending and skeletal bending of α	32.9
	795.0	CH_2 rocking of α	
	853.8, 870.2, 974.4	C-H out of plane bending of α phase	
	840.8	CH_2 rocking of β	
	1066.9	C-C anti-symmetric stretching of β	

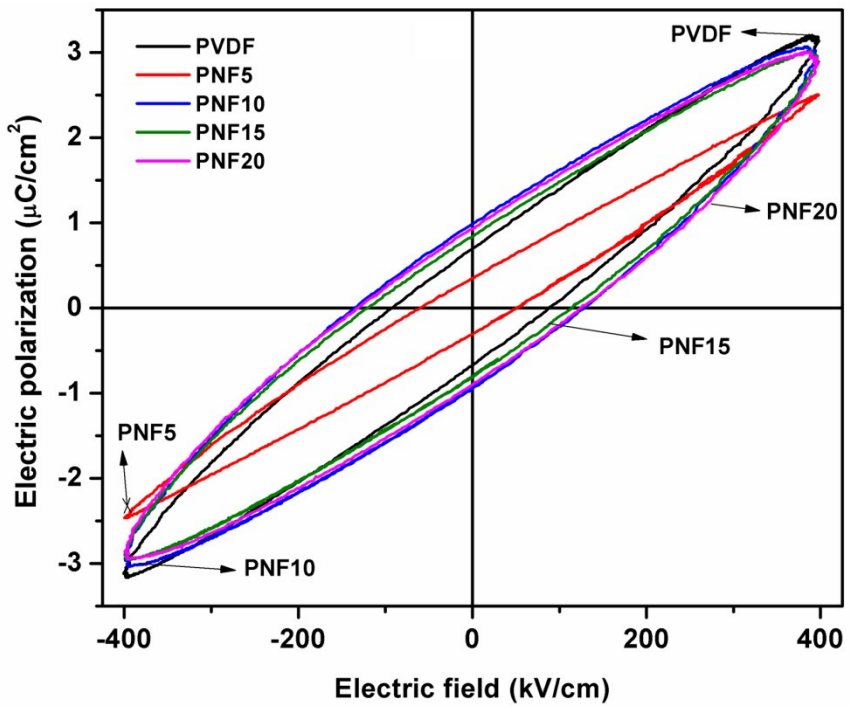

Fig.Es.3. Ferroelectric hysteresis loops of PVDF and PVDF/$NiFe_2O_4$ films

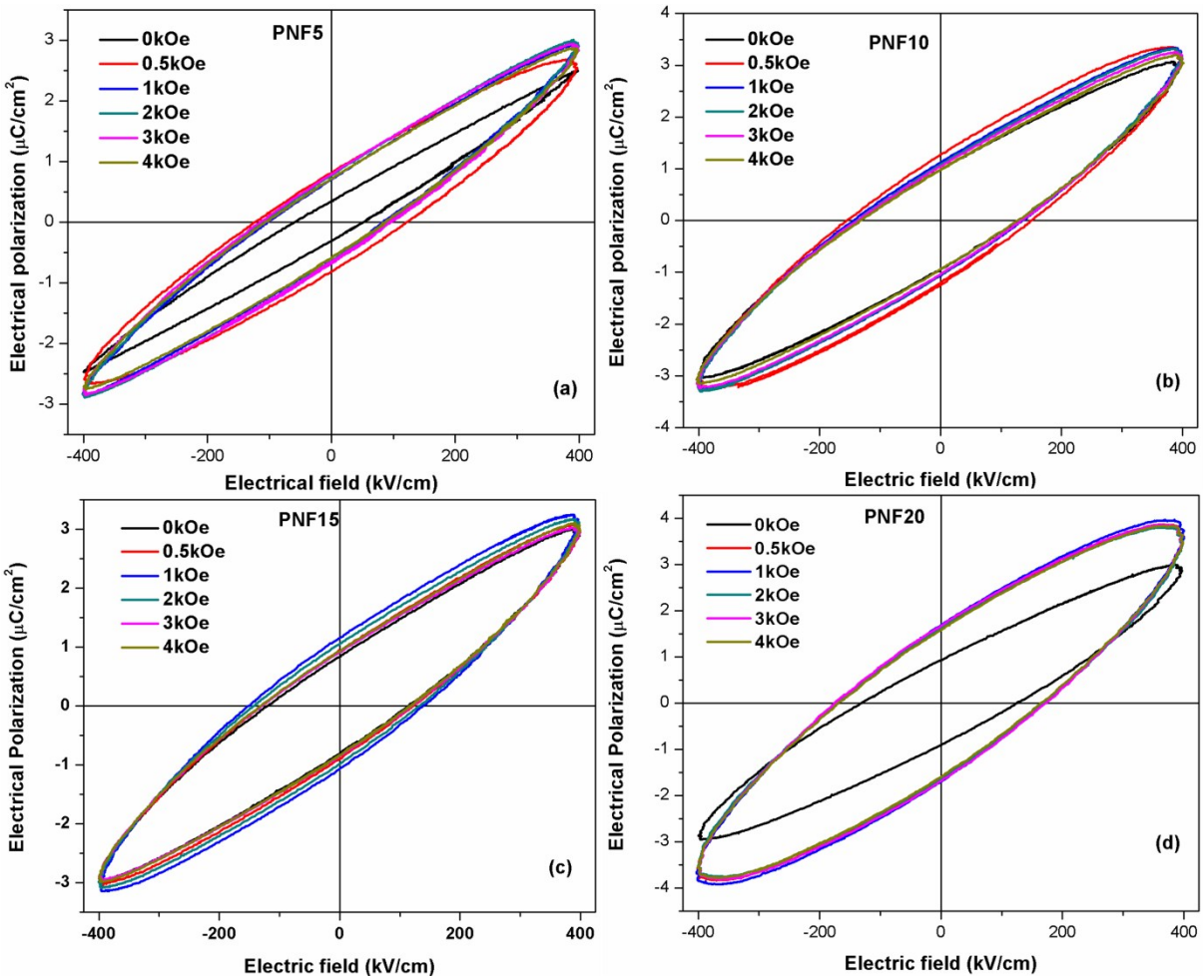

Fig.Es.4 (a) to (d) Ferroelectric responses of PVDF/$NiFe_2O_4$ films in different magnetic fields