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Supporting Information

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A Novel Triple-shape PCU/PPDO Interpenetrating Polymer Networks Constructed by Self-Complementary Quadruple Hydrogen Bonding and Covalent Bonding

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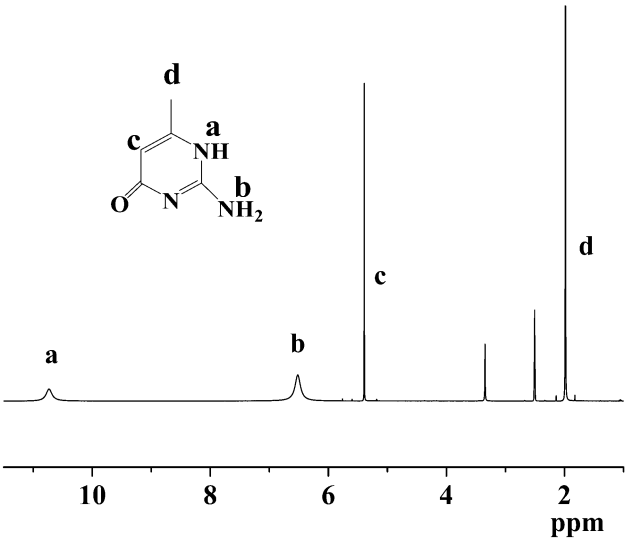

Fig. S1 The H NMR spectrum of 2-amino-4-hydroxy-6-methylpyrimidine (MIC).

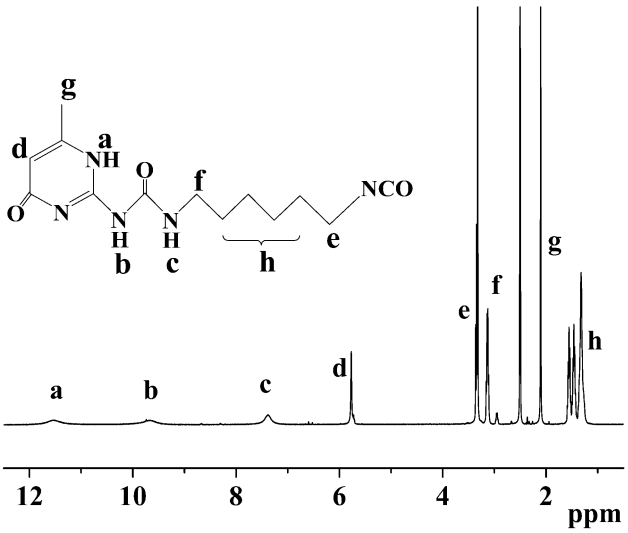

Fig. S2 The H NMR spectrum of 2-ureido-4-pyrididone (UPy).

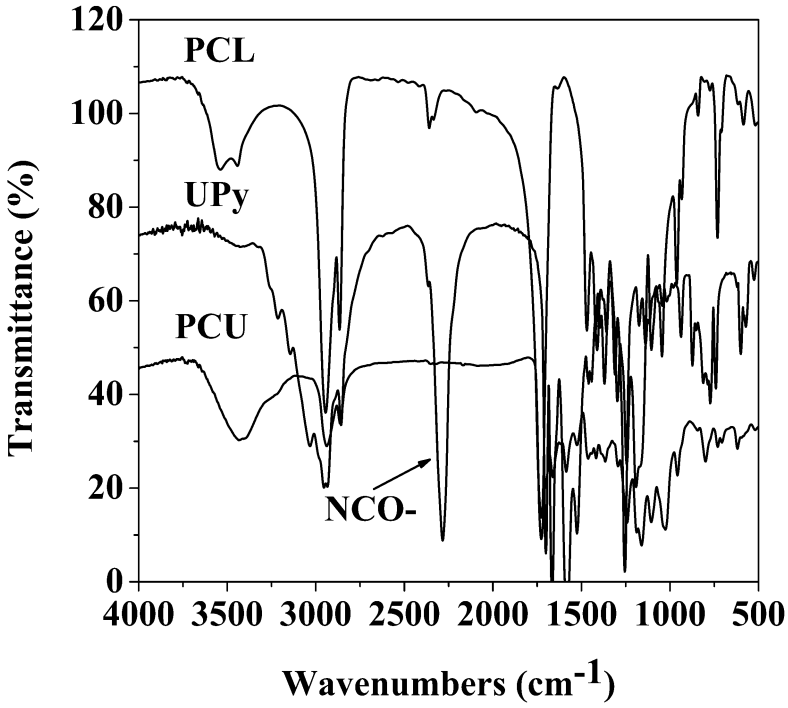

Fig. S3 The spectrum of 2-ureido-4-pyrididone (UPy), [4]PCL and PCU.

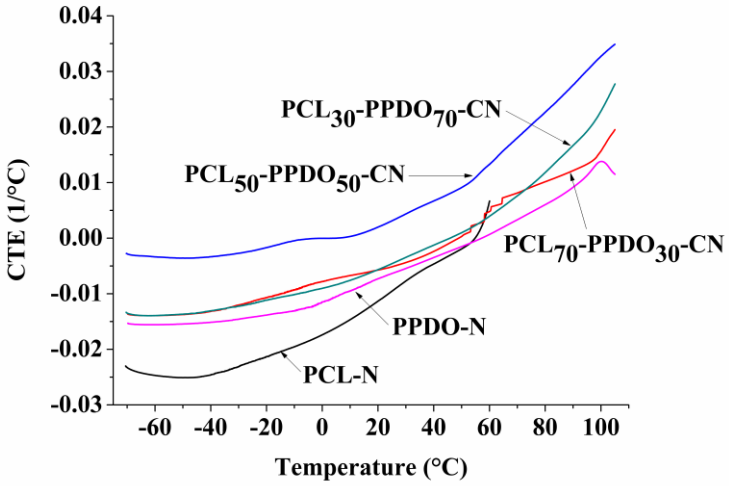

Fig. S4 Temperature dependence of CTE of PCL-N, PPDO-N and PCL-PPDO-CN.

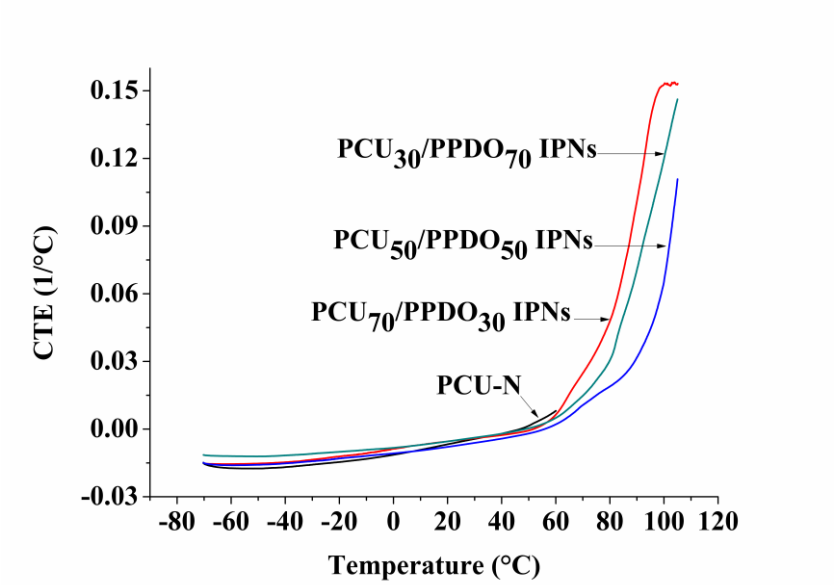

Fig. S5 Temperature dependence of CTE of PCU-N and PCU/PPDO IPNs.

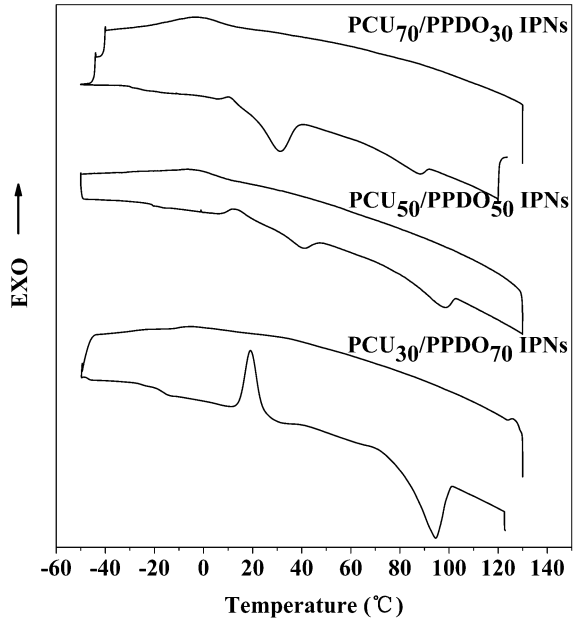

Fig. S6 DSC curves for IPNs at different heating rate: the up for $PCU_{70}/PPDO_{30}$ IPNs at 2 ° C min^{-1}, the middle for $PCU_{50}/PPDO_{50}$ IPNs at 1 ° C min^{-1} and the below for $PCU_{30}/PPDO_{70}$ IPNs at 2 ° C min^{-1} in Temperature-modulated mode.

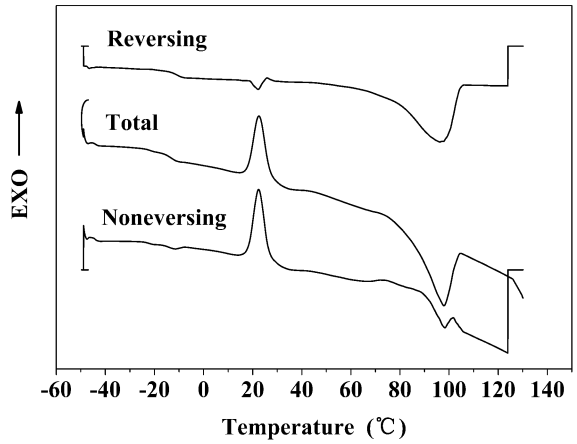

Fig. S7 TMDSC traces of $PCU_{30}/PPDO_{70}$ IPNs nonisothermally crystallized from the amorphous state at 2 ° C min^{-1}. Reversing heat flow (Reversing), Nonreversing heat flow (Nonreversing), Total heat flow (Total).

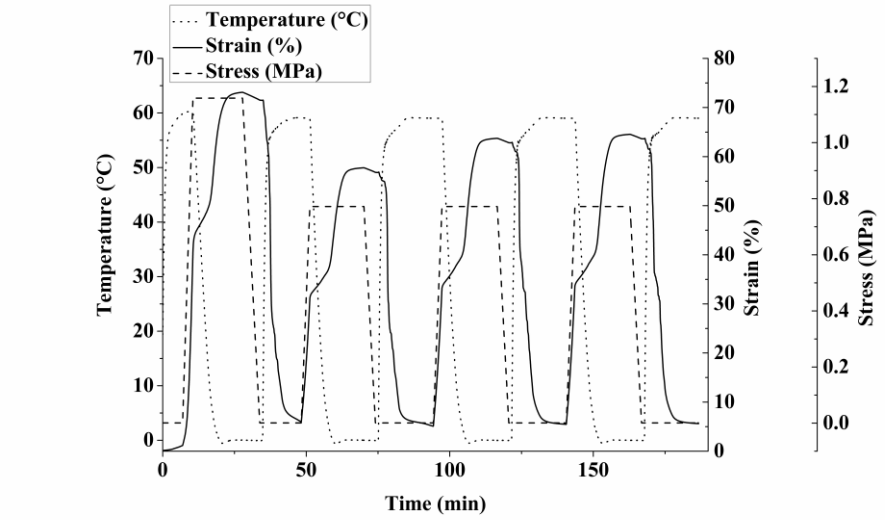

Fig. S8 The dual-shape memory effect behavior of PCL-N.

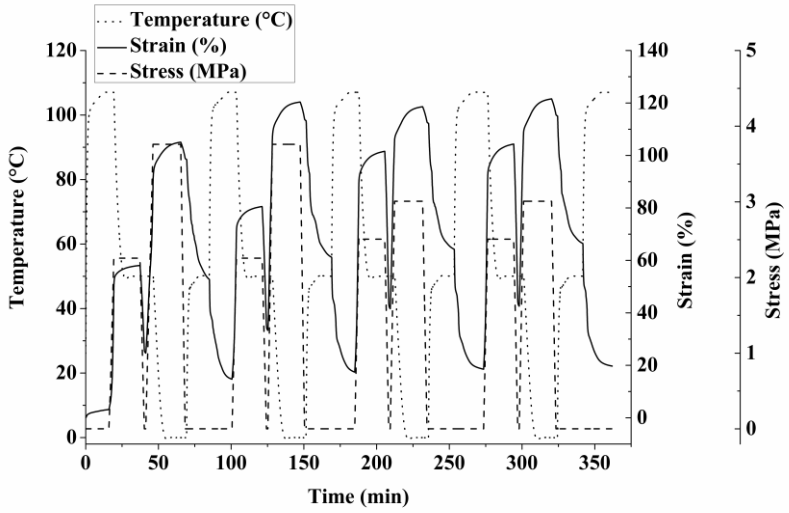

Fig. S9 The triple-shape memory effect behavior of PCL_{70}-$PPDO_{30}$-CN.

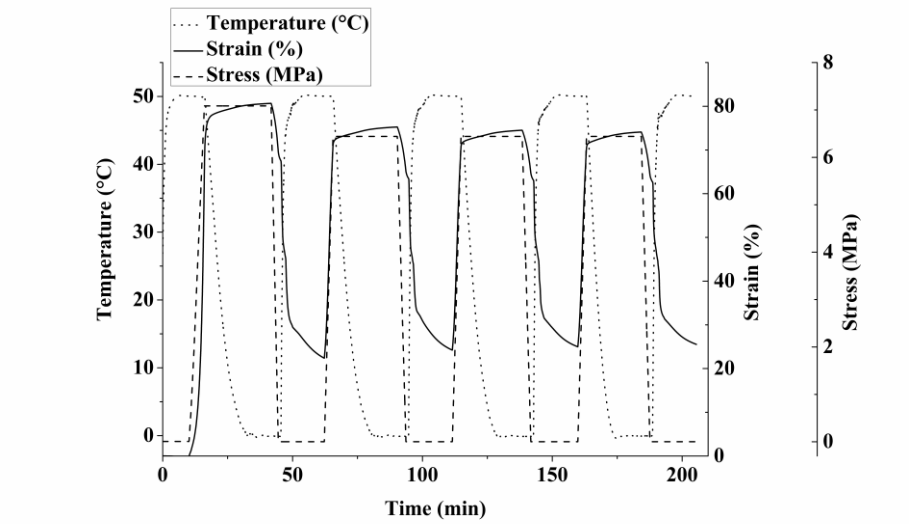

Fig. S10 The dual-shape memory effect behavior of PCL_{50}-$PPDO_{50}$-CN.

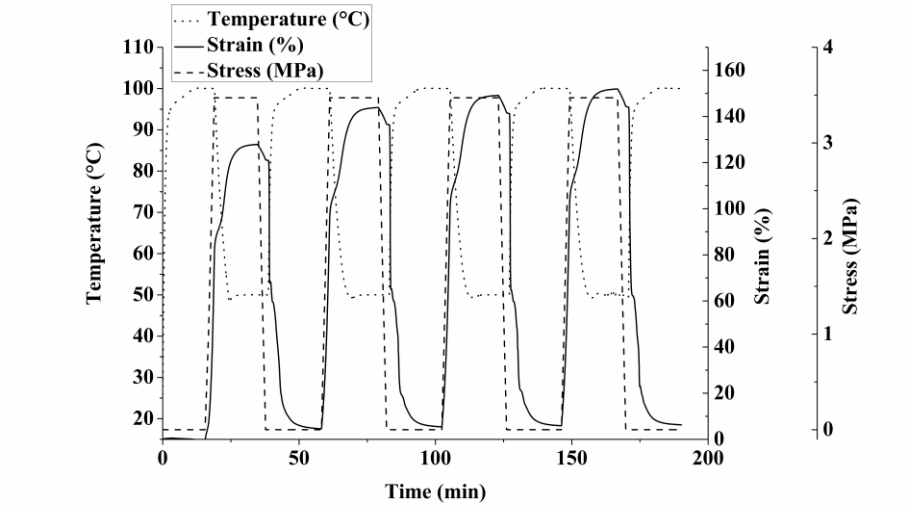

Fig. S11 The dual-shape memory effect behavior of PPDO-N.

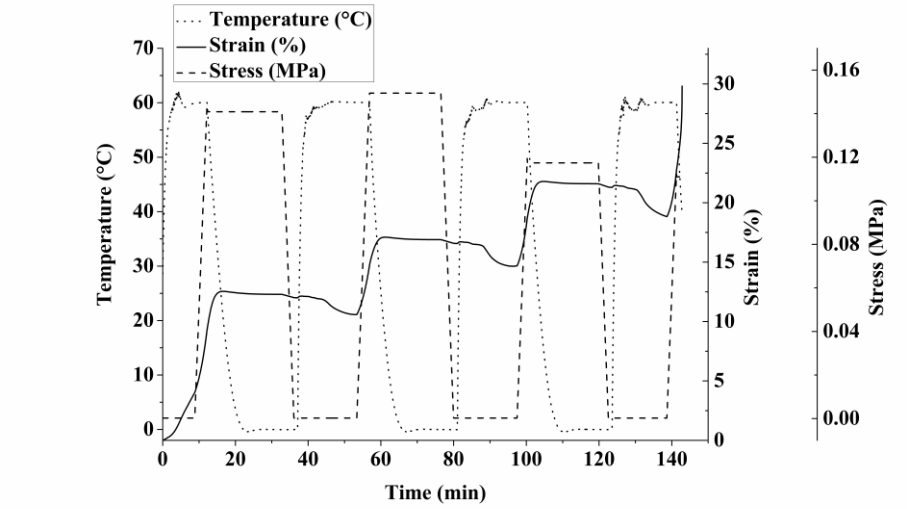

Fig. S12 The dual-shape memory effect behavior of PCU-N.

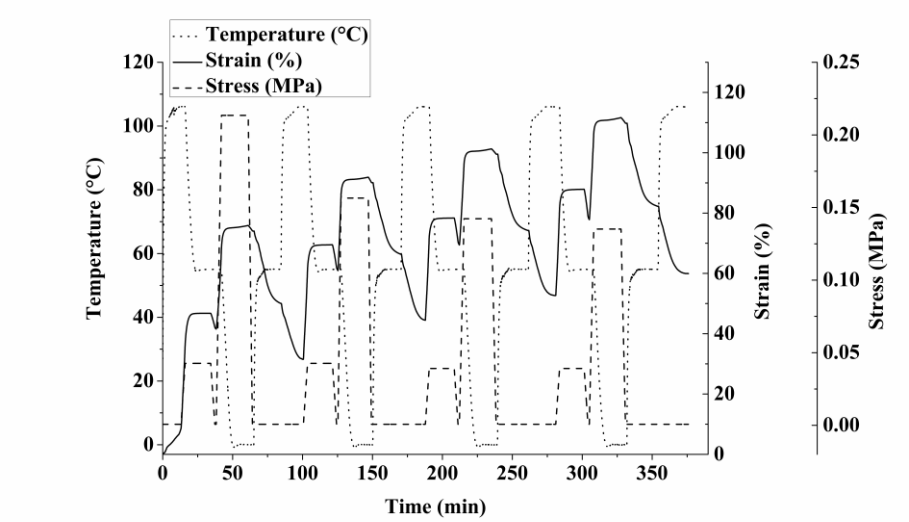

Fig. S13 The triple-shape memory effect behavior of $PCU_{70}/PPDO_{30}$ IPNs.

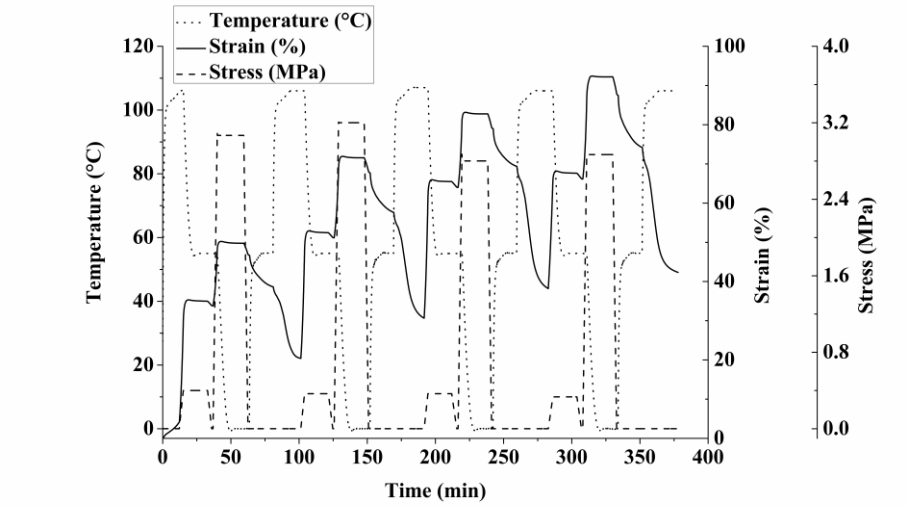

Fig. S14 The triple-shape memory effect behavior of $PCU_{50}/PPDO_{50}$ IPNs.

Table S1 Data of various composition of PCU/PPDO IPNs from DSC and TMDSC analysis.

Sample name	1_{st} cooling scan				Subsequent heating scan					
	T_c^a (° C)	ΔH_c^a (J g^{-1})	T_c^b (° C)	ΔH_c^b (J g^{-1})	T_{cc}^b (° C)	ΔH_{cc}^b (J g^{-1})	T_m^a (° C)	ΔH_m^a (J g^{-1})	T_m^b (° C)	ΔH_m^b (J g^{-1})
$PCU_{70}/PPDO_{30}$ IPNs	-13.6	11.6	--	--	--	--	41.1	15.7	97.8	3.9
$PCU_{50}/PPDO_{50}$ IPNs	-2.0	7.4	--	--	13.5	8.2	40.4	10.1	97.4	16.2
$PCU_{30}/PPDO_{70}$ IPNs	--	--	--	--	22.4	22.4	22.3	2.1	97.9	9.2

[a] is PCU segment, [b] is PPDO segment. For $PCU_{30}/PPDO_{70}$ IPNs, T_{cc}^b is obtained from the Nonreversing heat flow, T_m^a and T_m^b are obtained from the Rversing heat flow.