Octadecyl Acrylate-Based Self-Supporting Elastic Phase Change Framework Materials for the Enhancement of Photovoltaic Conversion Efficiency

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Table S1. The formulation of synthesized SS-PCAs and PCGs

Entery	Crosslinking Alkyl length	Molar ratio of A18/ADA	Solvent phase/ (*wt*%)
POT1	C14	9:1	DMAc/80
POT1	C14	9:1	DMAc/80
POT2	C14	8:2	DMAc/80

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POT2′	C14	8:2	THF/80
POT3	C14	7:3	DMAc/80
POD2	C22	8:2	DMAc/80
POT1/EI8	C14	9:1	EI/80
POT2/EI9[a]	C14	8:2	EI/90
POT2/EI8	C14	8:2	EI/80
POT2/EI7	C14	8:2	EI/70
POT3/EI8	C14	7:3	EI/80
POD2/EI9[a]	C22	8:2	EI/90
POD2/EI8	C22	8:2	EI/80

[a] adsorption preparation;

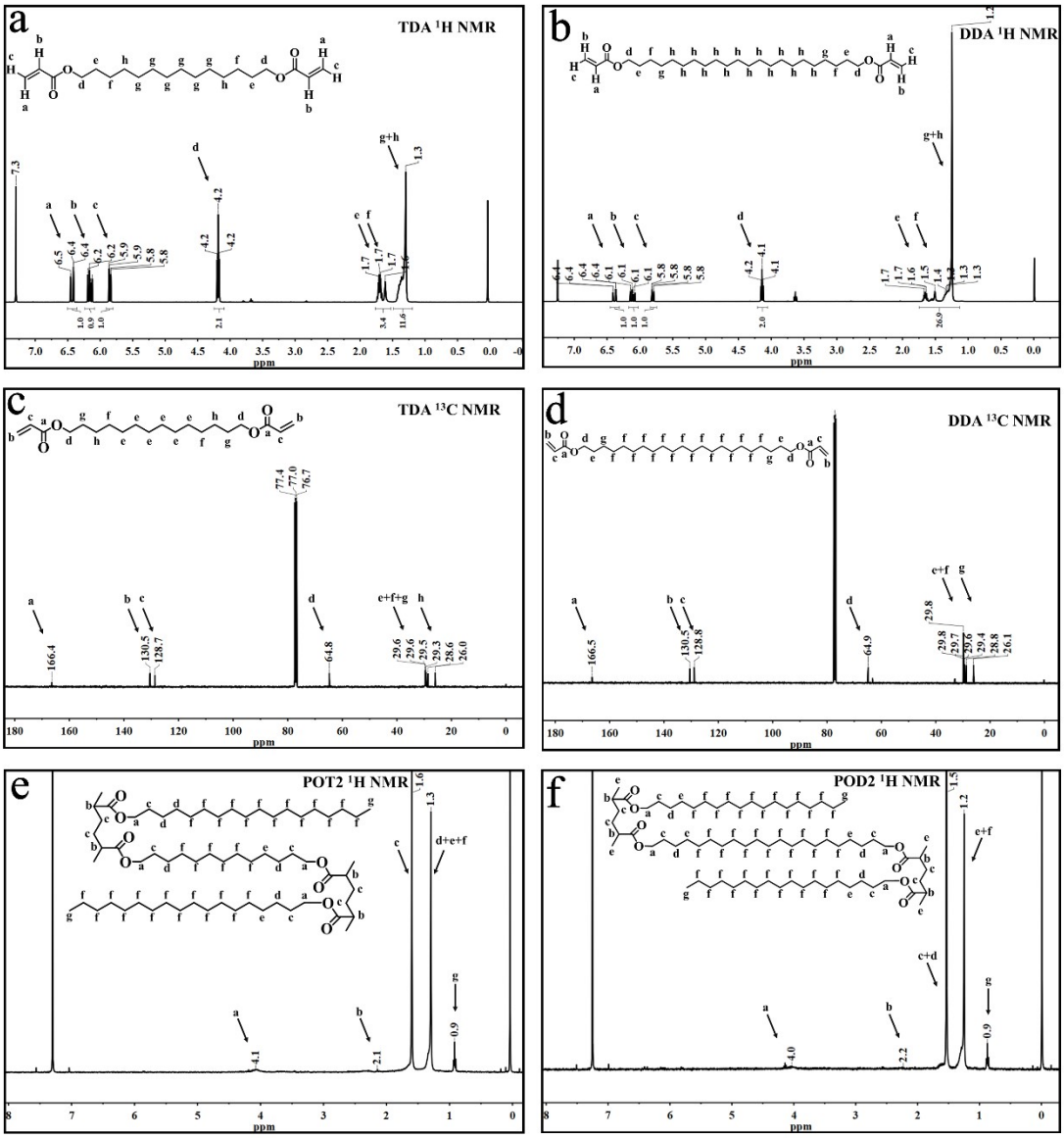

Figure 1S. The corresponding peak position and integral area according to ^{1}H CMR and ^{13}C NMR of TDA, DDA, POT2 and POD2.

Table S2. Component Group Contributions to Hansen Solubility Parameters[1]

Structure group	$F_{d,i}$ $(J^{1/2}cm^{3/2}/mol)$	$F_{p,i}$ $(J^{1/2}cm^{3/2}/mol)$	$E_{h,i}$ (J/mol)
-CH_3	303	0	0
-CH_2-	270	0	0
=CH-	176	0	0
-COO-	669	0	5230

Table S3. Thermal stabilities of TD, TDA, EI, POT2 and POT2/EI8

Sample No.	Ta do (°C)	Tb dp (°C)	Mass loss (%)
PA18	384	414	98
TD	212	238	98
TDA	403	429	99
EI	192	226	97
POT2	392	418	100
POT2/EI8	199/380	229/418	98

[a]: The onset decomposition temperature; [b]: The fastest decomposition temperature.

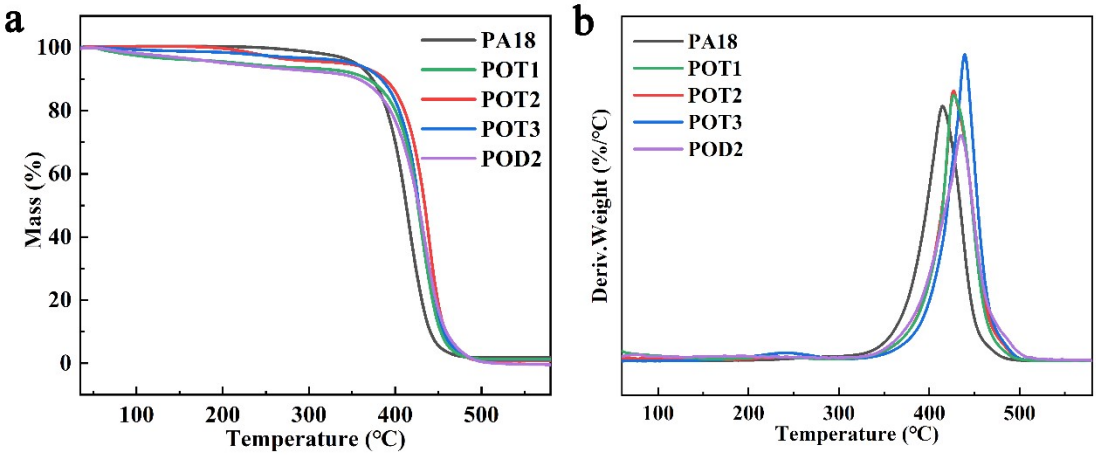

Figure 2S. (a) TG and (b) DTG curves of POT*x* and POD*x*.

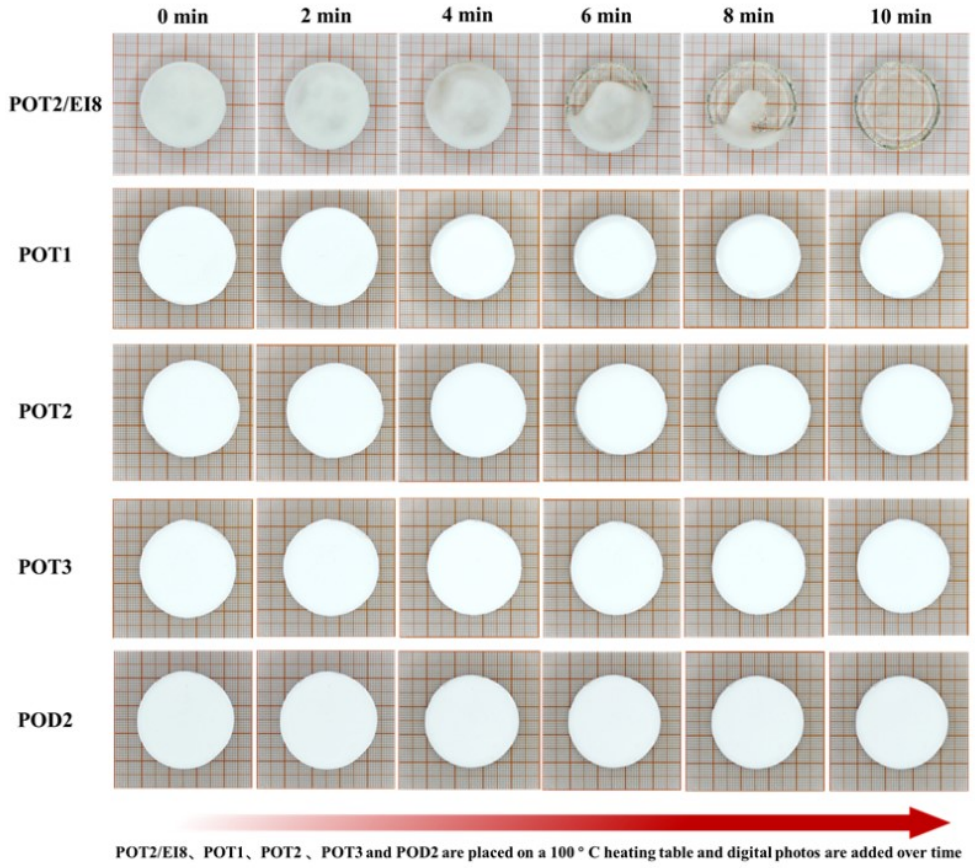

Figure 3S. Form-stability test of POT*x* and POT2/EI8 performed by heating

Table S4. DSC data of POT2, POT2/EI8 and the corresponding after 100 thermal cycles

Entery	ΔH_m (J/g)	Ta mo (°C)	Tb mp (°C)	ΔH_c (J/g)	Tc co (°C)	Td cp (°C)
POT2	56	21	38	58	35	29
POT2-100 thermal cycles	54	22	39	56	34	28
POT2/EI8	170	23	37	165	32	26
POT2/EI8-100 thermal cycles	168	23	38	162	31	27

[a]: Onset temperature of the melting peak. [b]: Peak temperature of the melting peak.

[c]: Onset temperature of the crystallization peak. [d]: Peak temperature of the crystallization peak.

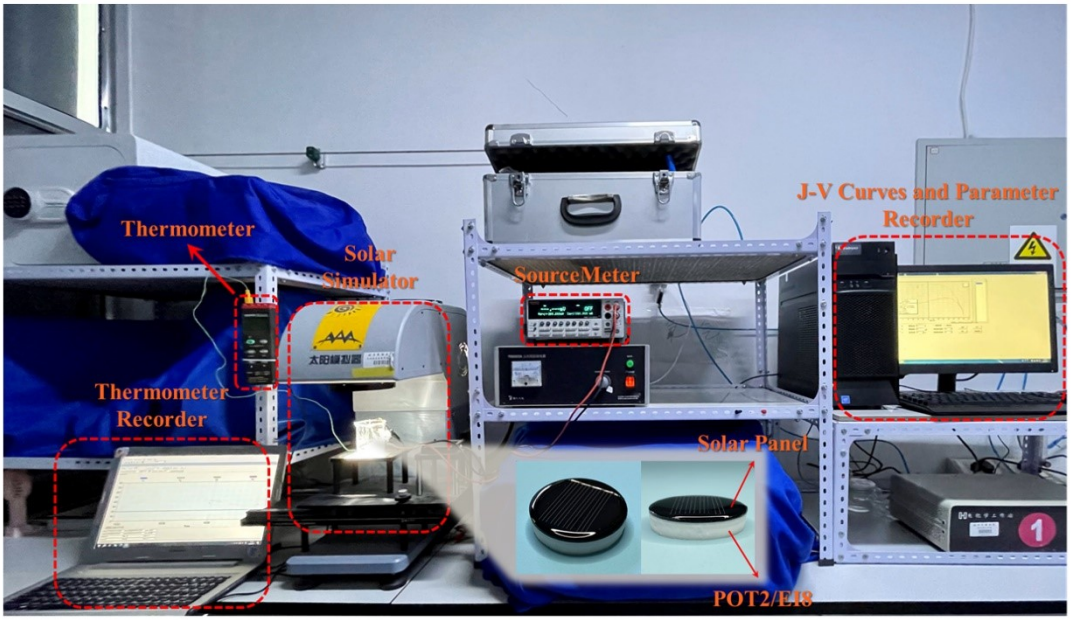

Figure 4S. The image of thermal management system for polycrystalline silicon photovoltaic cells.

[1] a)J.-F. Li, Z.-L. Xu, H. Yang, C.-P. Feng, J.-H. Shi, *Journal of Applied Polymer Science* **2008**, 107, 4100; b)HANSEN C M., *Boca Raton: CRC Press* **2007**.