Electronic Supplementary Material (ESI) for RSC Advances.

Supporting information

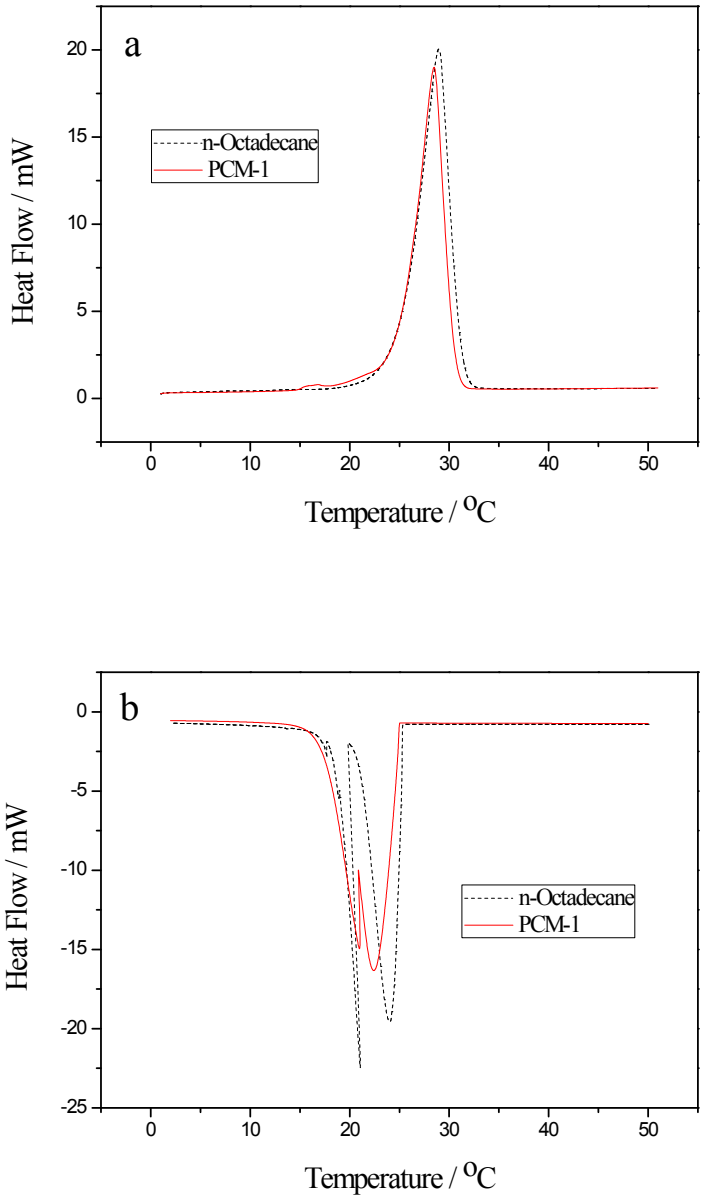


Fig. S1 DSC curves of n-octadecane and PCM-1: (a) melting process and (b) solidifying process

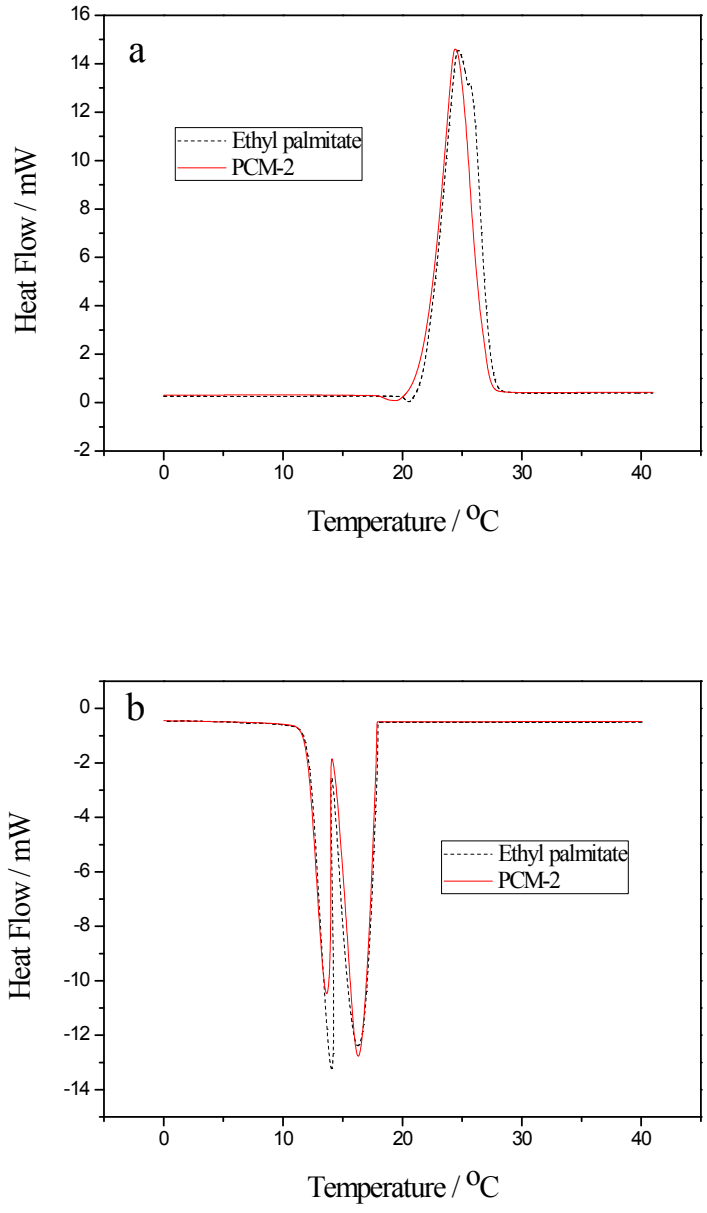


Fig. S2 DSC curves of ethyl palmitate and PCM-2: (a) melting process and (b) solidifying process

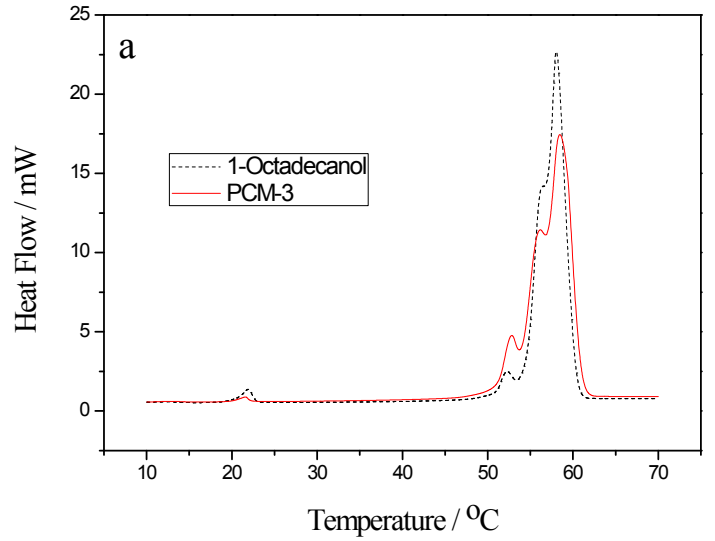
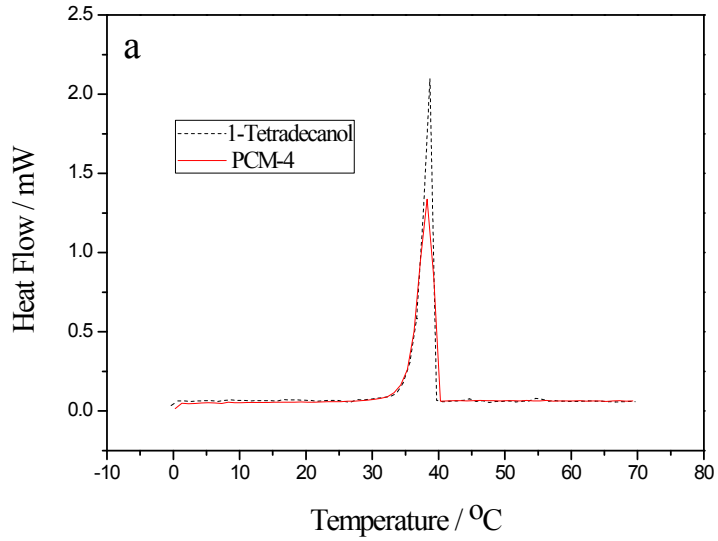


Fig. S3 DSC curves of 1-octadecanol and PCM-3; (a) melting process and (b) solidifying process



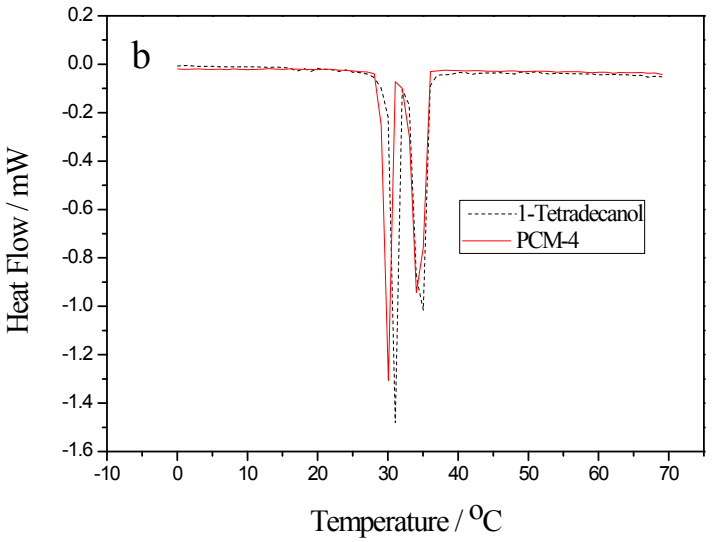


Fig. S4 DSC curves of 1-octadecanol and PCM-3; (a) melting process and (b) solidifying process

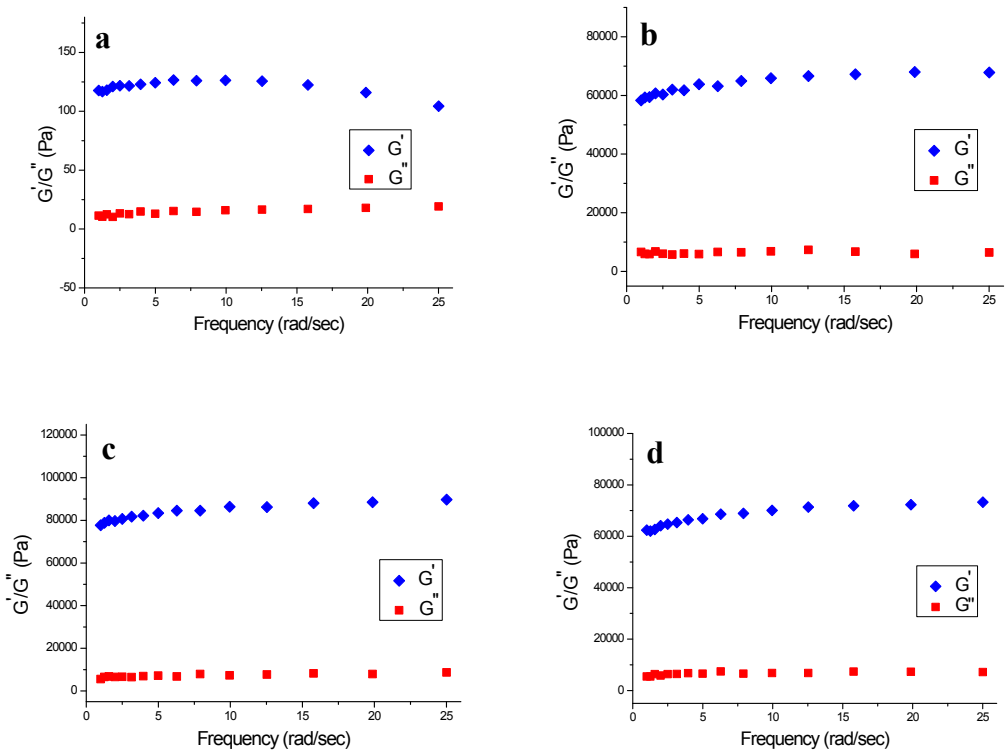


Fig. S5 Frequency dependence of the dynamic storage moduli G' and loss moduli G" of different composite PCMs: (a) PCM-1; (b) PCM-2; (c) PCM-3; (d) PCM-4.

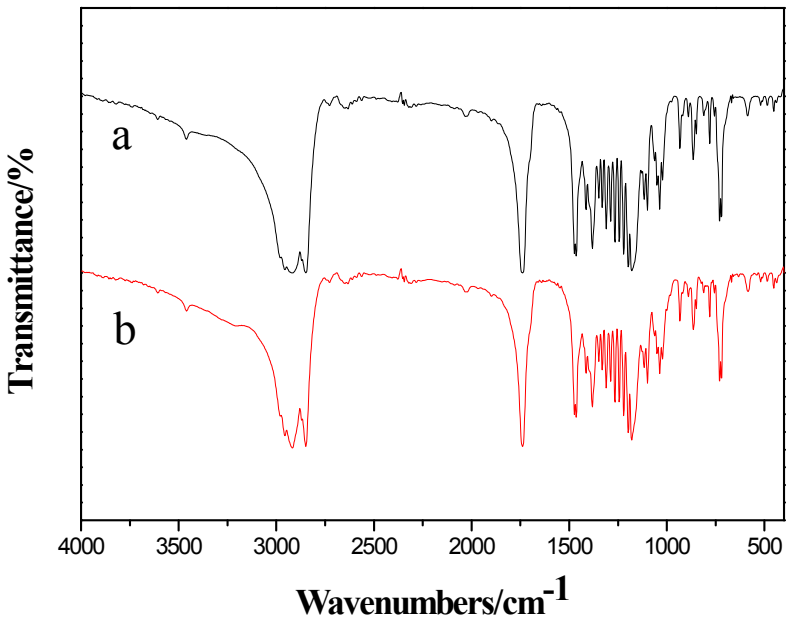


Fig. S6 FTIR spectra of (a) ethyl palmitate, (b) PCM-2

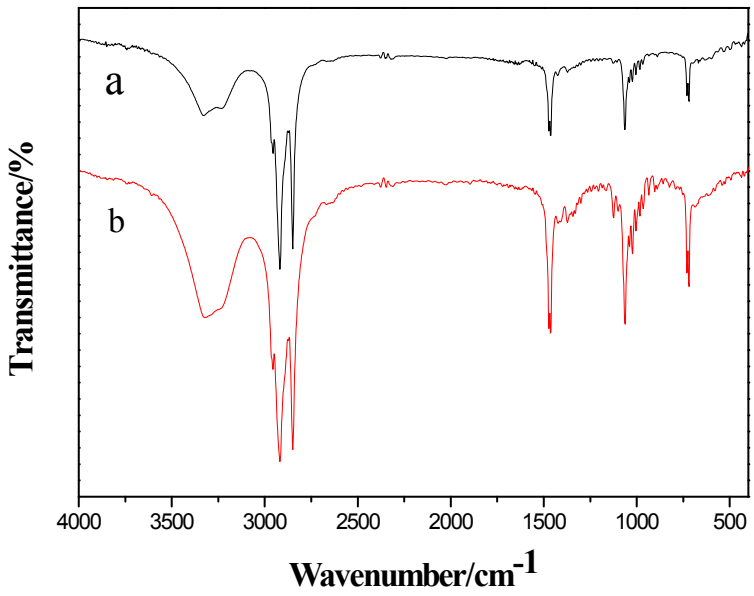


Fig. S7 FTIR spectra of (a) 1-octadecanol, (b) PCM-3

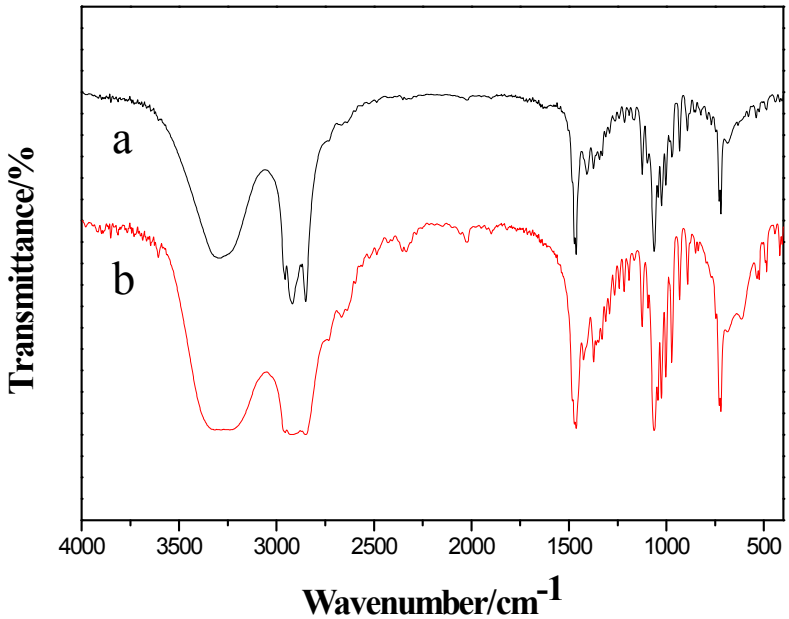


Fig. S8 FTIR spectra of (a) 1-tetradecanol, (b) PCM-4

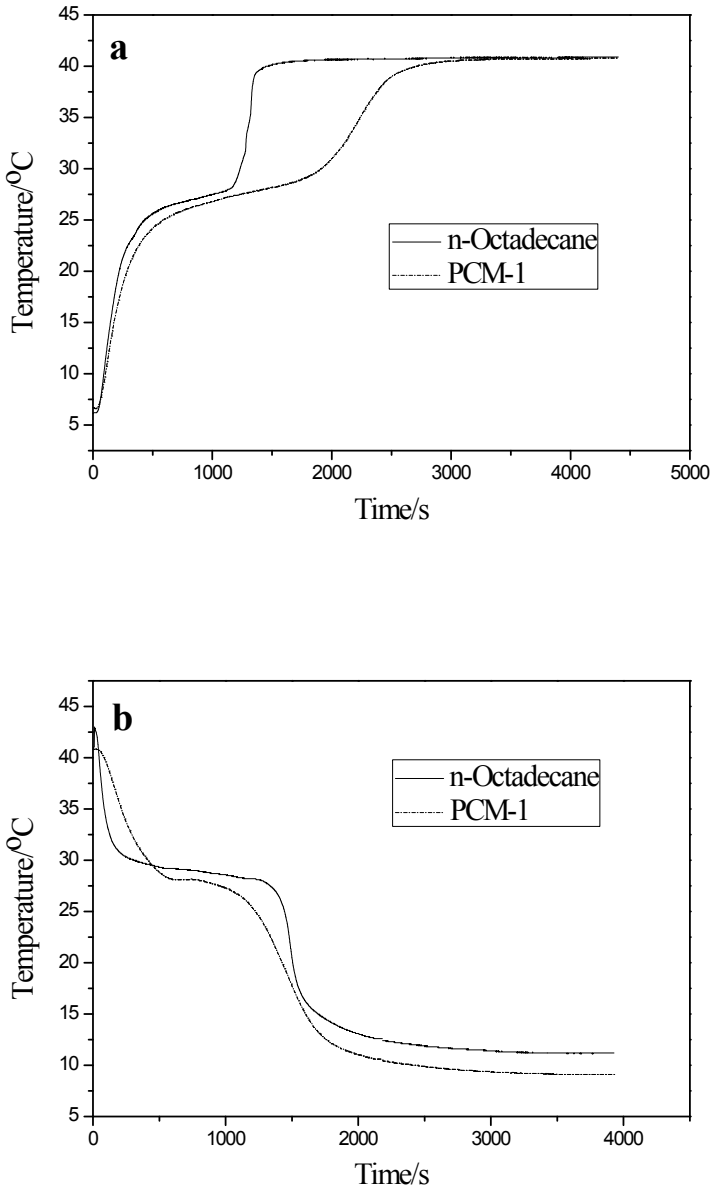


Fig. S9 Endothermic (a) and Exothermic (b) curves of n-octadecane and PCM-1

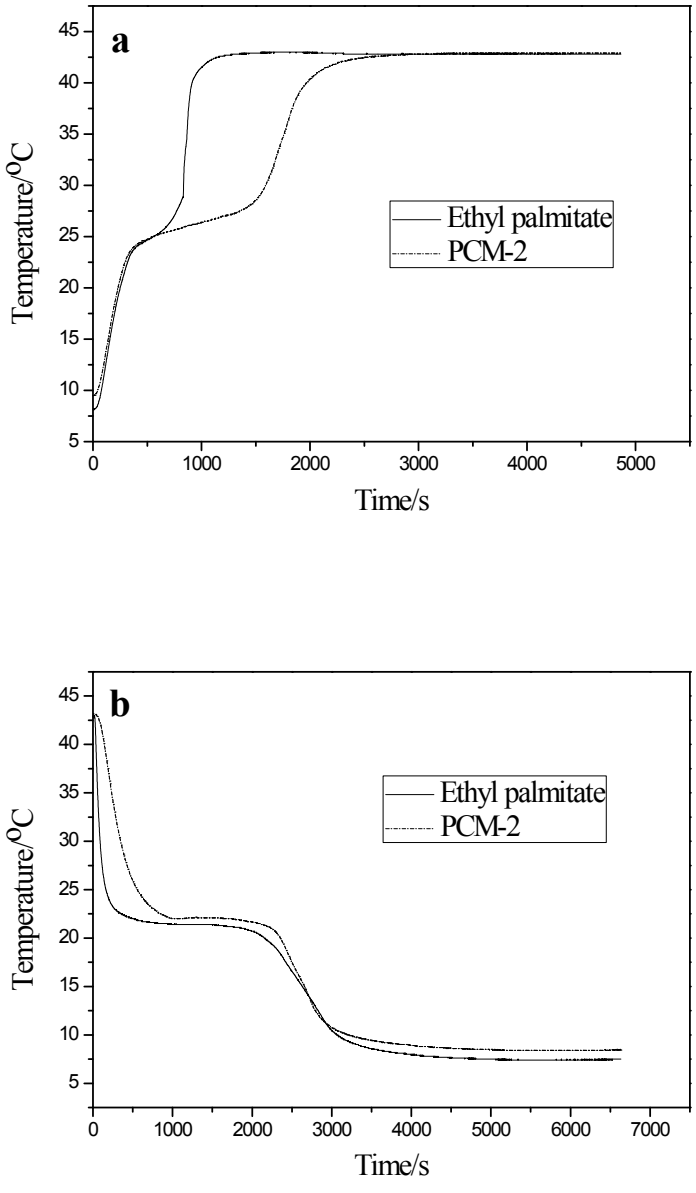


Fig. S10 Endothermic (a) and Exothermic (b) curves of ethyl palmitate and PCM-2

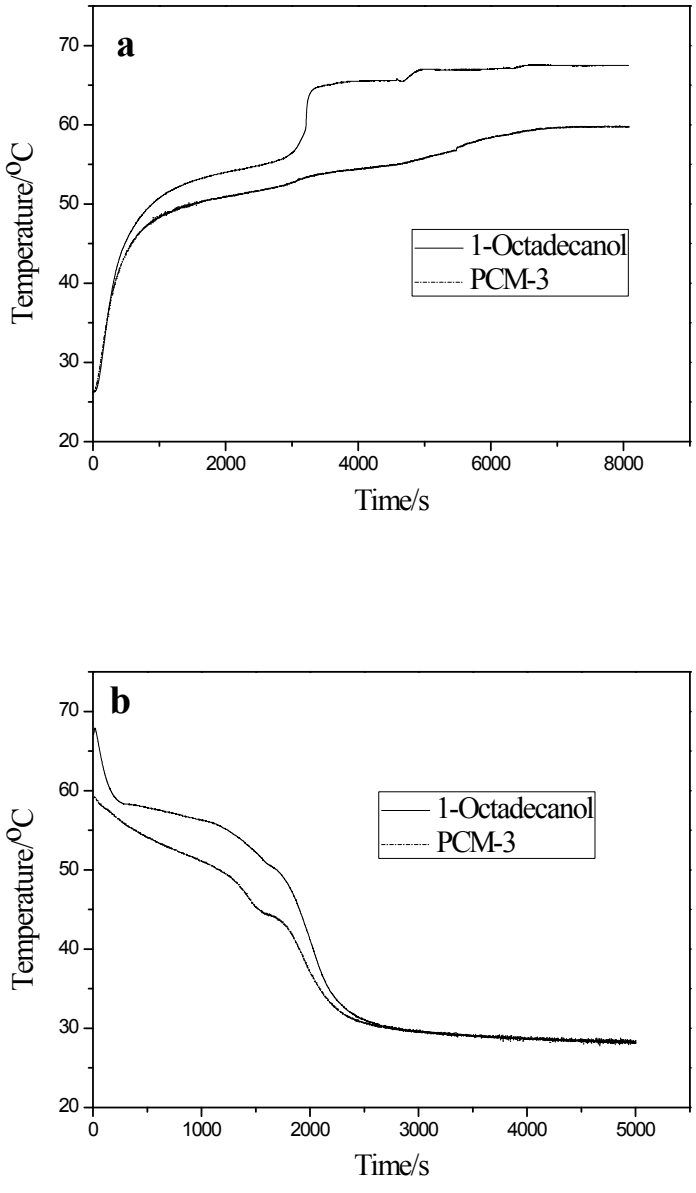


Fig. S11 Endothermic (a) and Exothermic (b) curves of 1-octadecanol and PCM-3

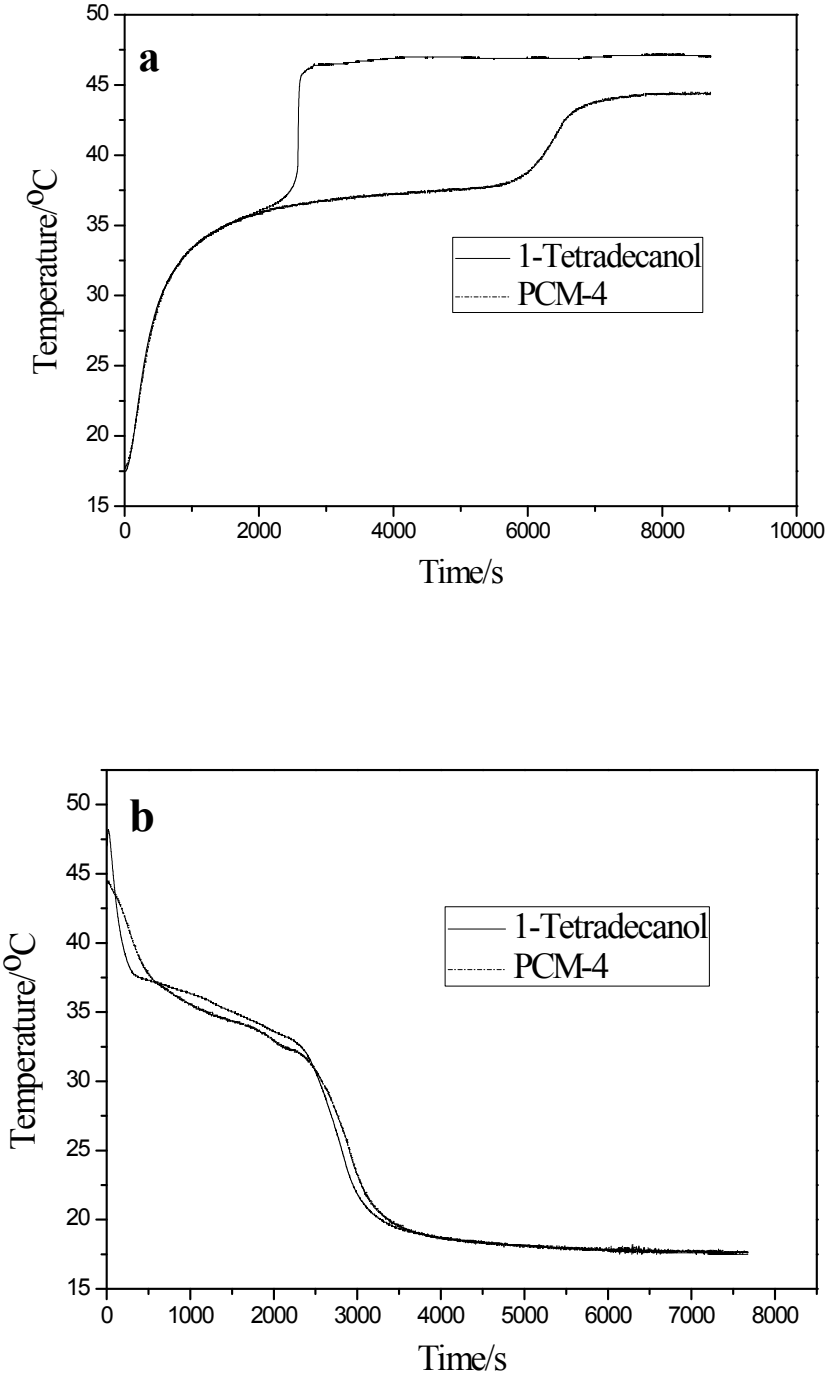


Fig. S12 Endothermic (a) and Exothermic (b) curves of 1-tetradecanol and PCM-4

Table S1 Summary of group additivity values of DMDBS.

Fedors Method							
Groups	$-CH_3$	$-CH_2$	$-CH<$	-O-	$-OH^{-a}$	Phenyl (trisubstituted)	Ring closure5 or more atoms
Occurrences, N_i	4	2	6	4	2	2	2
E_i(J/mol)	4710	4940	3430	3350	29800	31940	1050
V_i(cm^3/mol)	33.5	16.1	-1.0	3.8	10.0	33.4	16
Sum	$E_{coh}=\sum E_iN_i=188280$ $V=\sum V_i N_i=294.2$						
$\delta(J^{1/2}/cm^{3/2})$	$\delta=(E_{coh}/V)^{1/2}=25.3$						

Table S2 Summary of group additivity values of n-octadecane.

Fedors Method		
Groups	$-CH_3$	$-CH_2-$
Occurrences, Ni	2	16
Ei(J/mol)	4710	4940
Vi(cm^3/mol)	33.5	16.1
Sum	$E_{coh}=\sum E_iN_i=88460$ $V=\sum V_i N_i=324.6$	
$\delta(J^{1/2}/cm^{3/2})$	$\delta=(E_{coh}/V)^{1/2}=16.5$	

Table S3 Summary of group additivity values of ethyl palmitate.

Fedors Method			
Groups	$-CH_3$	$-CH_2-$	$-CO_2-$
Occurrences, Ni	2	15	1
Ei(J/mol)	4710	4940	18000
Vi(cm^3/mol)	33.5	16.1	18.0
Sum	$E_{coh}=\sum E_iN_i=101520$ $V=\sum V_i N_i=326.5$		
$\delta(J^{1/2}/cm^{3/2})$	$\delta=(E_{coh}/V)^{1/2}=17.6$		

Table S4 Summary of group additivity values of 1-octadecanol.

Fedors Method			
Groups	$-CH_3$	$-CH_2-$	$-OH$
Occurrences, Ni	1	17	1
Ei(J/mol)	4710	4940	29800
Vi(cm^3/mol)	33.5	16.1	10.0
Sum	$E_{coh}=\sum E_i N_i$ =118490 $V=\sum V_i N_i$ =317.2		
$\delta(J^{1/2}/cm^{3/2})$	$\delta=(E_{coh}/V)^{1/2}$ =19.4		

Table S5 Summary of group additivity values of 1-tetradecanol

Fedors Method			
Groups	$-CH_3$	$-CH_2-$	$-OH$
Occurrences, Ni	1	13	1
Ei(J/mol)	4710	4940	29800
Vi(cm^3/mol)	33.5	16.1	10.0
Sum	$E_{coh}=\sum E_i N_i$ =98730 $V=\sum V_i N_i$ =252.8		
$\delta(J^{1/2}/cm^{3/2})$	$\delta=(E_{coh}/V)^{1/2}$ =19.8		