Table 1 Phase change properties and thermal stabilities of pure *n*-octadecane and the microcapsules synthesized by using different amine monomers [55].

Sample Code	Core/shell Ratio(wt/wt)	T_m (^oC)	*ΔHm* (J/g)	Tc (^oC) α β	*ΔHc* (J/g)	Encapsulation Ratio (wt %)	Encapsulation efficiency (%)	Temperature at characteristic weight loss (^oC) 2 (wt%) 10 (wt%)	Temperature at rapid weight loss (^oC)	Char yield at 550 ^oC (wt%)
1	100/0	26.36	214.6	24.60 22.49	216.2	-	-	-	-	-
2	70/30 (EDA)	28.16	158.7	22.12 20.17	157.1	74.2	73.3	131.08 171.37	216.23	1.45
3	75/25 (EDA)	27.24	153.2	21.80 20.08	152.0	71.4	70.9	130.21 170.77	216.23	1.45
4	70/30 (DETA)	27.73	165.1	22.74 21.40	164.2	76.9	76.4	139.29 171.98	217.31	0.59
5	75/25 (DETA)	26.90	158.6	22.46 21.35	156.1	73.9	73.0	131.31 148.86	183.97	1.50
6	70/30 (Jeffamine)	27.04	188.9	22.82 21.61	187.9	88.1	87.4	135.66 171.60	217.04	0.79
7	75/25 (Jeffamine)	26.80	171.8	22.64 21.32	171.3	80.0	79.6	122.34 160.48	200.69	0.83

Table 2 Comparison of microcapsule sizing results before and after thermal cycling [112].

Sample No. of cycles	Median (μm)				Mean (μm)				Std Dev (μm)			
	0	10	50	100	0	10	50	100	0	10	50	100
n-eicosane (50μ) a	37	41	37	37	37	43	37	38	1.0	.21	.16	.17
b	25	26	24	24	24	26	21	22	1.0	.17	.24	.23
n-eicosane (100μ) a	124	107	95	99	114	109	88	94	1.0	.13	.17	.17
b	12	78	11	11	16	62	17	14	1.1	.27	.30	.34
n-eicosane (250μ) a	215	217	215	210	195	213	210	205	1.0	.11	.12	.12
b	68	57	45	29	57	63	55	43	1.2	.43	.43	.42
Stearic acid (50μ) a	58	88	64	64	55	103	63	63	1.1	.33	.19	.19
b	9.2	33	35	33	12	34	35	33	1.1	.21	.20	.20
Stearic acid (100μ) a	117	116	114	114	110	111	110	109	1.0	.13	.14	.13
b	14	49	37	47	23	48	42	46	1.2	.32	.32	.32
Stearic acid (250μ) a	147	173	155	165	135	161	135	153	1.0	.18	.22	.18
b	73	27	30	28	69	33	34	35	1.1	.32	.28	.32

Table 3 Diameters and distributions of microcapsule slurries with different concentrations of tetradecane encapsulated by PMMA [115].

Concentration of tetradecane (%)	Mean volumetric diameter (μm)	*D*(*v*,0.1) (μm)*	*D*(*v*,0.5) (μm)*	*D*(*v*,0.9) (μm)*	*U***
5	10.16	1.71	6.78	15.45	0.98
10	12.99	2.13	12.72	23.54	0.51
15	10.86	1.95	10.52	19.90	0.52
20	19.73	2.76	17.93	37.80	0.58
25	11.08	2.16	10.73	19.78	0.49
30	13.98	2.51	13.63	24.74	0.48
35	10.15	2.01	9.23	19.43	0.58
40	16.89	2.60	16.73	29.58	0.45

**D*(*v*,0.1), *D*(*v*,0.5), *D*(*v*,0.9) represent 10%, 50% and 90% microcapsule particles whose mean volumetric diameter is less than this value, respectively.

***U* is the diameter distribution index. The smaller the U, the narrower the diameter distribution.

Table 4 Viscosities of microcapsule slurry with different concentrations of tetradecane encapsulated by PMMA [115].

Concentration of tetradecane (%)	Viscosity at 25 ^{o}C (mPa s)	Viscosity at 5 ^{o}C (mPa s)
5	0.98	2.74
10	1.04	1.85
15	1.54	1.57
20	1.94	1.39
25	3.31	5.23
30	4.21	5.53
35	4.11	5.84
40	12.58	20.87

Table 5 Results of durability experiments [117].

Batch number	MPCM size range (μm)	Total time of durability test [a] (h)	% of broken microcapsules (%)	Slurry velocity (m/s)	Accumulative circulation times
1	90-150	9.7	15.5	0.6-2.4	700
2	70-260	5	16	0.6	400
3	2-10	7	0 [b]	0.6-2.4	1200

a Total time includes cumulative results for the same batch at low and high mass fraction.

b No significant amount of free or released tetradecane was detected (within a 2% margin of error).

Table 6 Physical Properties of MPCM Slurry and its Components [140].

	Density (kg m^{-3})	Specific Heat (kJ kg^{-1} ^{o}C^{-1})	Thermal Conductivity (W m^{-1} ^{o}C^{-1})	Latent Heat (kJ kg^{-1})	Viscosity at 20 ^{o}C (mPa s)
1-Bromohexadecae					
Solid	1006	1.762	0.141	160	-
Liquid	998	1.437	0.300	-	-
Urea-formaldehyde	1490	1.675	0.433	-	-
Water (at 20 ^{o}C)	998	4183	0.599	-	-
MPCM particle					
Solid	1093	1.751	0.135	140	1.00
Liquid	1057	1.467	0.285		
MPCM slurry (mass fraction)					
Φ =0.050	1001	4.061	0.568	7.0	1.57
Φ =0.100	1004	3.940	0.539	14.0	1.73
Φ =0.158	1007	3.801	0.506	22.0	2.92
Φ =0.204	1010	3.687	0.480	28.6	3.29
Φ =0.276	1014	3.534	0.446	38.6	8.42