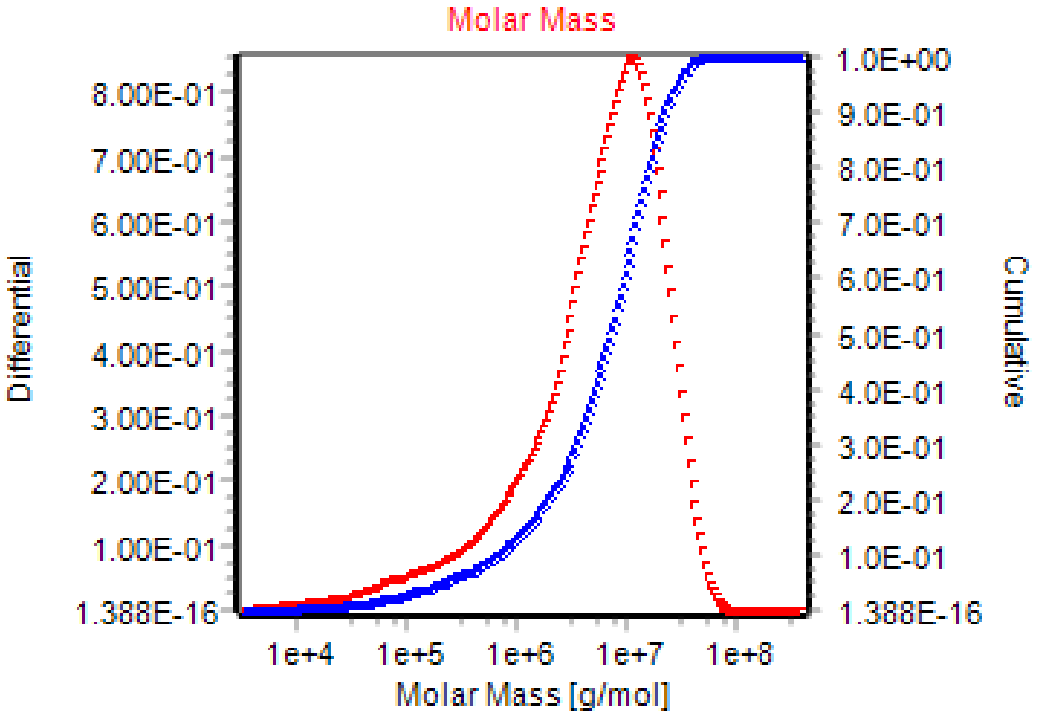
Supplementary Materials

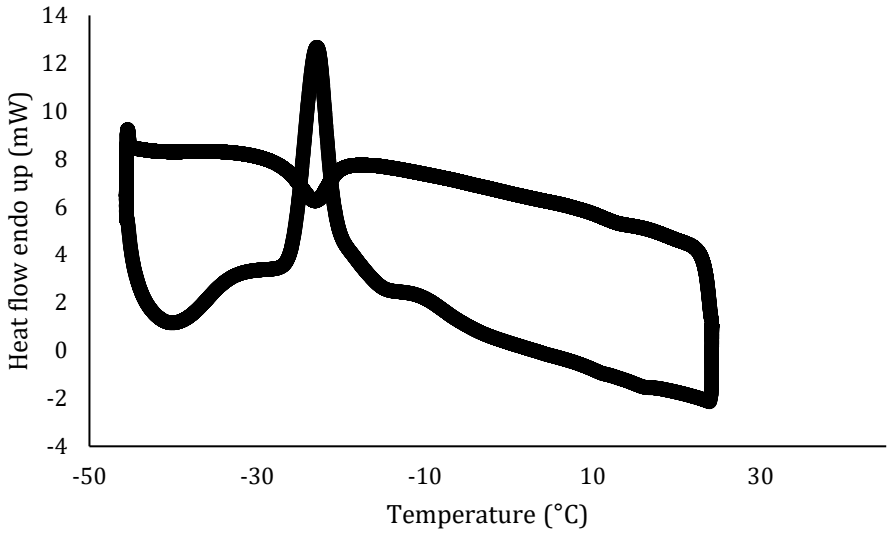
S1



	Mw (g/mol)	R_g (nm)	Recovery (%)
Purity Gum Ultra	1.0 x 10^7	52.7	82

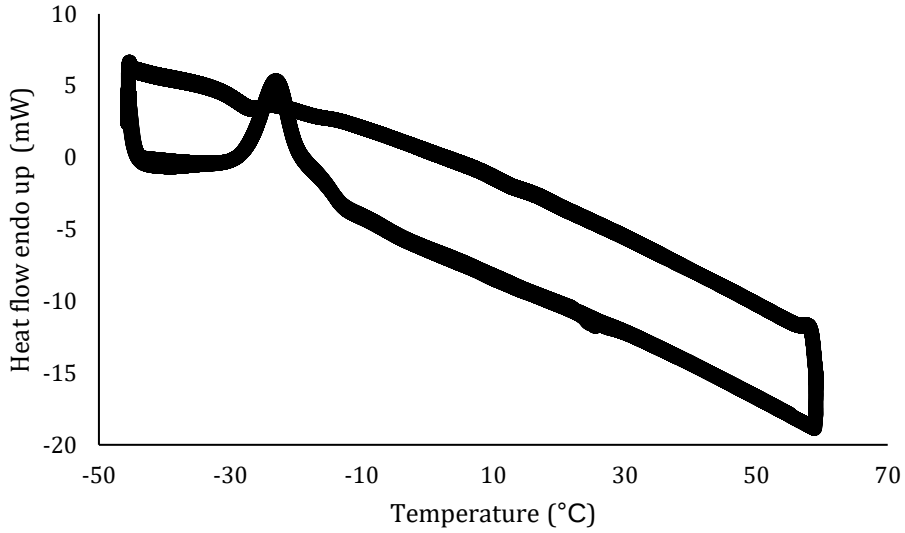
S2

A)



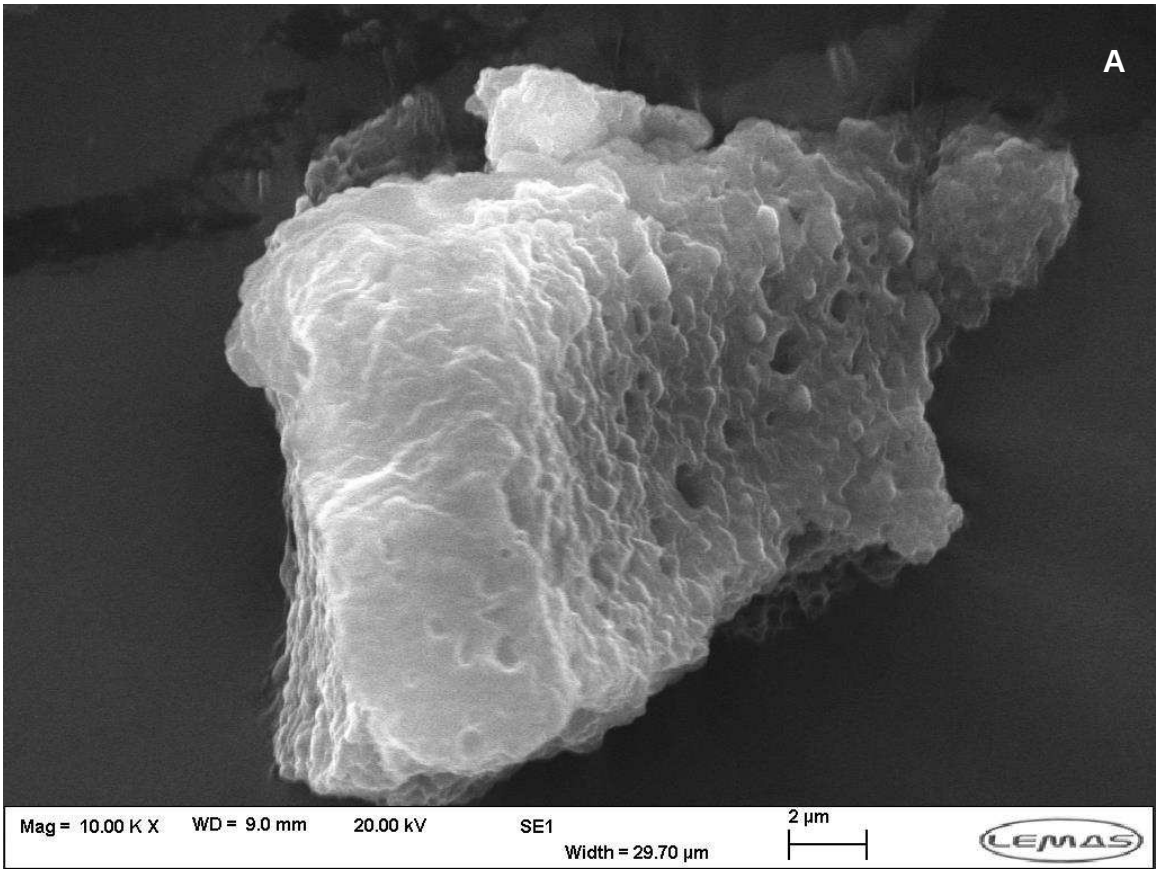
Heating:	Cooling:
Onset = -25.81 °C	Onset = -20.29 °C
Peak = -22.92 °C	Peak = -23.07 °C
Area = 212.8850 mJ	Area = -36.0798 mJ
Delta H = 16.6316 J/g	Delta H = -2.8187 J/g

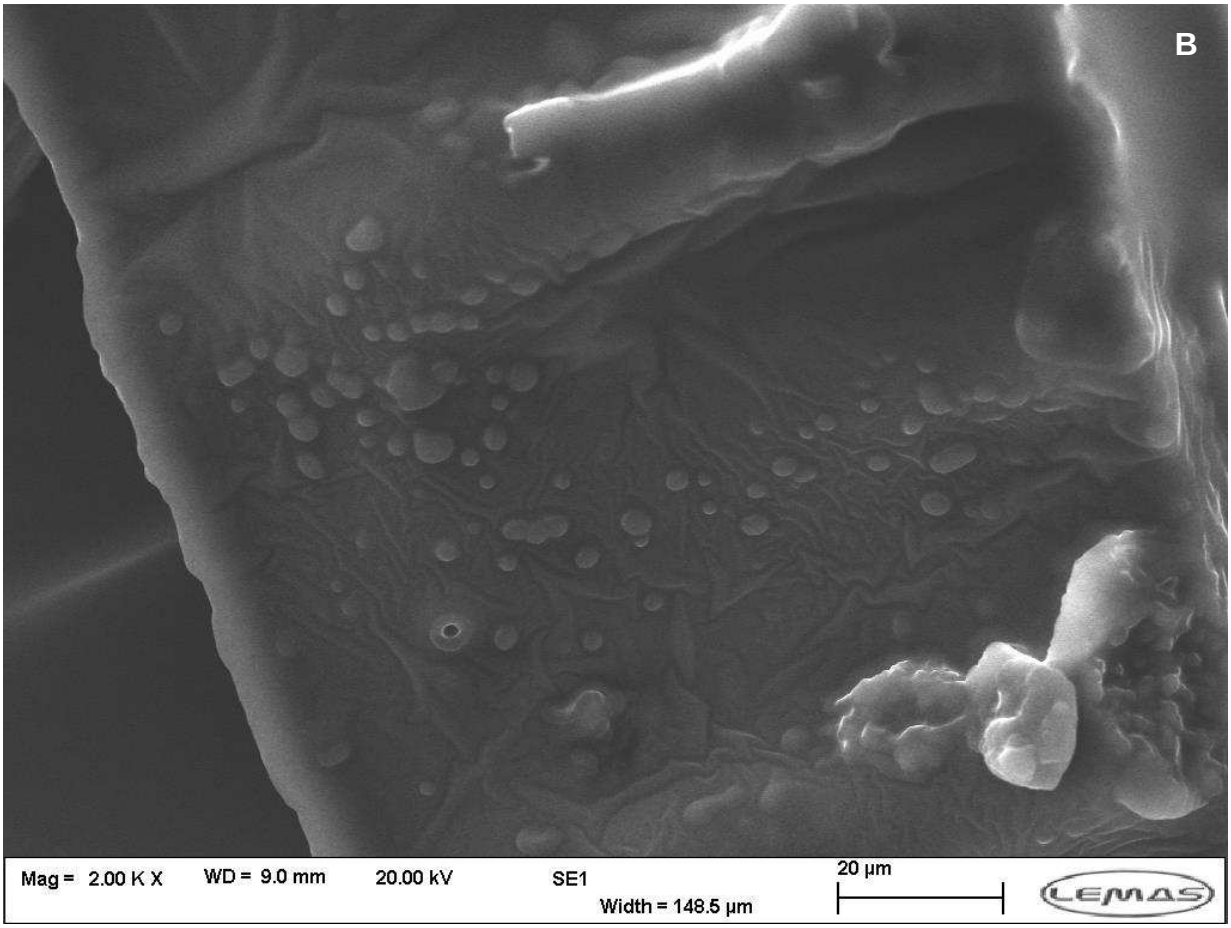
B)

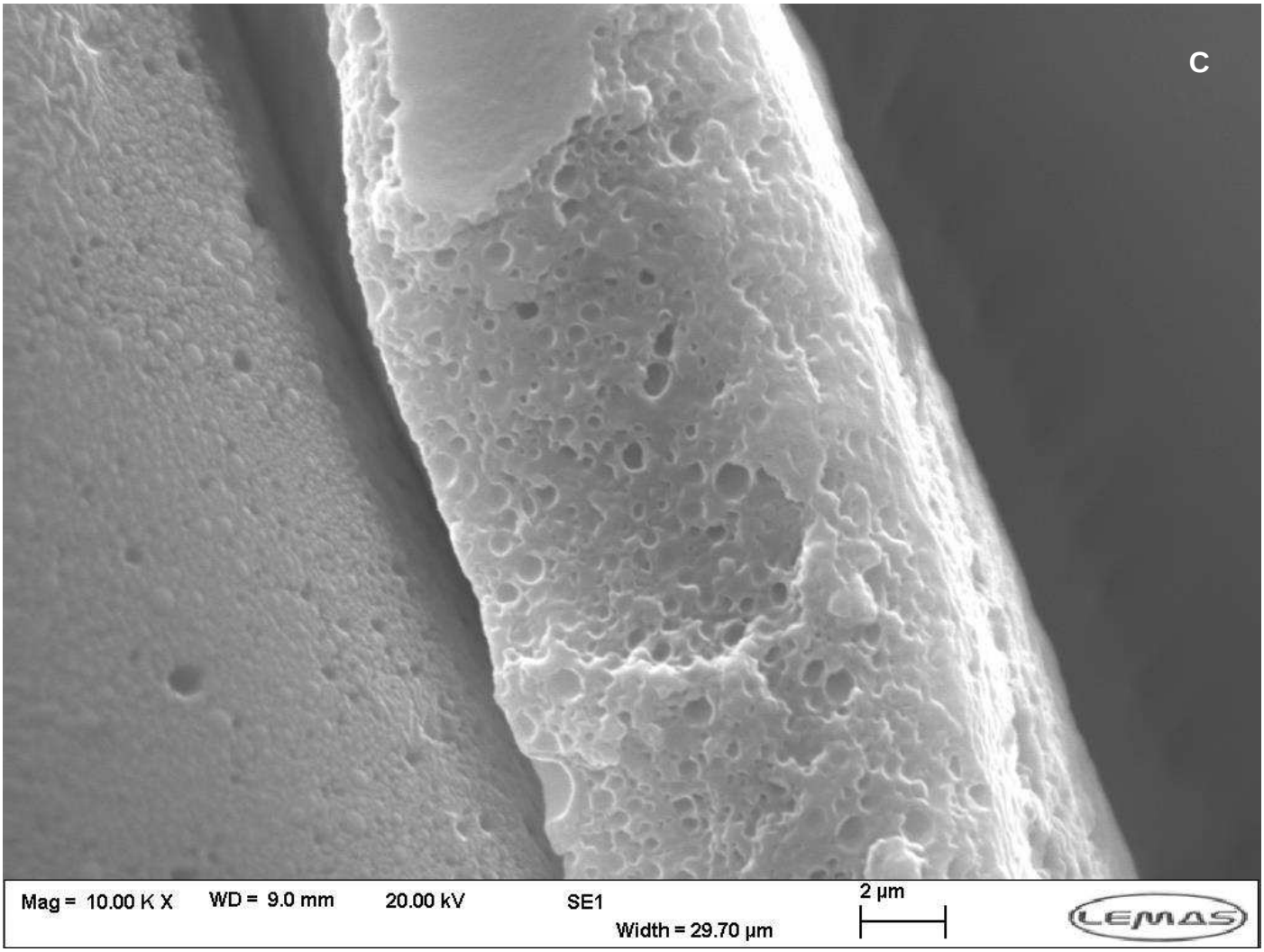


Heating:	Cooling:
Onset = -27.87 °C	Onset = -24.14 °C
Peak = -22.93 °C	Peak = -26.96 °C
Area = 269.4034 mJ	Area = 16.7105 mJ
Delta H = 23.4264 J/g	Delta H = -1.4531 J/g

S3


A
Mag = 10.00 K X
WD = 9.0 mm
20.00 kV
SE1
Width = 29.70 µm
2 µm
LEMAS


B
Mag = 2.00 K X
WD = 9.0 mm
20.00 kV
SE1
Width = 148.5 µm
20 µm
LEMAS


C
Mag = 10.00 K X
WD = 9.0 mm
20.00 kV
SE1
Width = 29.70 µm
2 µm
LEMAS

HRH	Before drying		After drying			
Days of storage	W_{sample} (g)	$W_{sample+dish}$ (g)	$W_{sample+dish}$ (g)	$W_{water\ loss}$ (g)	%weight of dried sample	Normalised increase
0	20.0014	35.5325	20.4830	15.0495	24.76%	1.00
1	20.0030	35.7846	20.8673	14.9173	25.42%	1.03
2	20.0018	35.5143	20.6300	14.8843	25.59%	1.03
5	20.0020	35.7509	20.9403	14.8106	25.95%	1.05
8	20.0002	35.5449	20.8150	14.7299	26.35%	1.06
11	20.0056	35.7942	21.0926	14.7016	26.51%	1.07
14	20.0010	35.5226	20.8034	14.7192	26.41%	1.07

LRH	Before drying		After drying			
Days of storage	W_{sample} (g)	$W_{sample+dish}$ (g)	$W_{sample+dish}$ (g)	$W_{water\ loss}$ (g)	%weight of dried sample	Normalised increase
0	20.0014	35.5325	20.4830	15.0495	24.76%	1.00
1	20.0020	35.5105	20.4888	15.0217	24.90%	1.01
2	20.0034	35.7486	20.7275	15.0211	24.91%	1.01
5	20.0003	35.5331	20.5131	15.0200	24.90%	1.01
8	20.0036	35.7790	20.7561	15.0229	24.90%	1.01
11	20.0042	35.5214	20.5000	15.0214	24.91%	1.01
14	20.0032	35.7595	20.7408	15.0187	24.92%	1.01

R	Before drying		After drying			
Days of storage	W_{sample} (g)	$W_{sample+dish}$ (g)	$W_{sample+dish}$ (g)	$W_{water\ loss}$ (g)	%weight of dried sample	Normalised increase
0	21.0018	36.6165	20.8974	15.7191	25.15%	1.00
1	21.0094	36.9558	21.2409	15.7149	25.20%	1.00
2	21.0008	36.9459	21.2450	15.7009	25.24%	1.00
5	21.0160	36.9862	21.2724	15.7138	25.23%	1.00
8	21.0076	36.9570	21.2838	15.6732	25.39%	1.01
11	21.0092	36.9760	21.3042	15.6718	25.41%	1.01
14	21.0040	36.9462	21.2709	15.6753	25.37%	1.01
17	21.0020	36.4518	20.7769	15.6749	25.36%	1.01
21	21.0134	36.4326	20.7453	15.6873	25.35%	1.01

S5

Dry storage conditions	Moisture content (w/w%)
0 day storage	3.02% ± 0.74%
-30°C, 10 days	3.39% ± 0.42%
-18°C, 10 days	3.58% ± 0.12%
4°C, 10 days	4.97% ± 0.19%
20°C, 10 days	5.13% ± 0.00%

S1 Molecular weight determination with asymmetrical flow field-flow fractionation (AF4)

S2 Differential scanning calorimetry for A) bulk sunflower oil, B) freeze-dried powder with no dry storage

S3 SEM images on samples that has been dry stored for A) 14 days at 4°C, B) 7 days at -30°C, C) 2 days at -30°C

S4 Weight change in HRH, LRH and R samples. Normalised increase in weight is shown as the ratio of weights between sample after t day storage and sample with 0 day storage.

S5 Moisture content of freeze-dried emulsion powders stored under different temperatures