Supporting Information

Polymerization Mechanism of Poly(Ethylene Glycol Dimethacrylate) Fragrance Nanocapsules

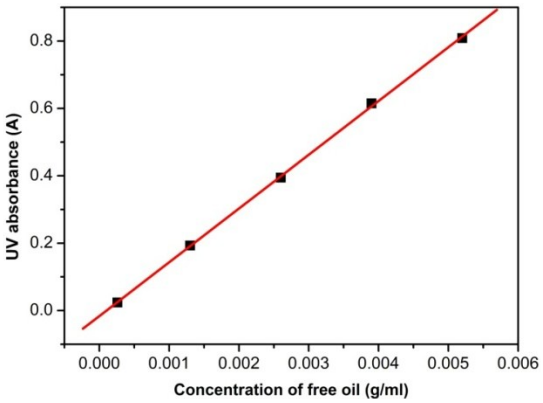
Di Zhao,[1] Xin Jiao,[1] Yao Zhang,[1] Dong An,[1] Xiaodi Shi,[1] Xihua Lu, [1,2*] Gao Qiu,[2] Kenneth J. Shea[3]

1. Encapsulation efficency

A certain core material DPO dissolved in toluene to form five standard samples whose concentrations were 0.00026 g/ml, 0.00130 g/ml, 0.00260 g/ml, 0.00390 g/ml and 0.00520 g/ml, respectively. Firstly, through test of the standard samples via ultraviolet spectrophotometer (Lamda 35, PerkinElmer), it was found that the largest absorption peak of DPO was 283 nm. And then, the UV absorptions of the five standard samples were tested at 283 nm, respectively. The linear relationship of the concentration of core material (x) and the UV absorption (y) of the five standard samples was built up based on the calibration curve of spectrophotometry, namely : y=157.8974x-0.0125 shown in **Figure S1**. Finally, nanocapsule slurry (3 g) of sample which was to be measured was added into toluene (40 g). The unencapsulated core material (free oil) was extracted into the toluene. And the UV absorption (y) of the toluene solution was tested and the concentration of free oil (x) was determined through the linear relationship. According the equation (1), the encapsulation efficiency of the core material was calculated.

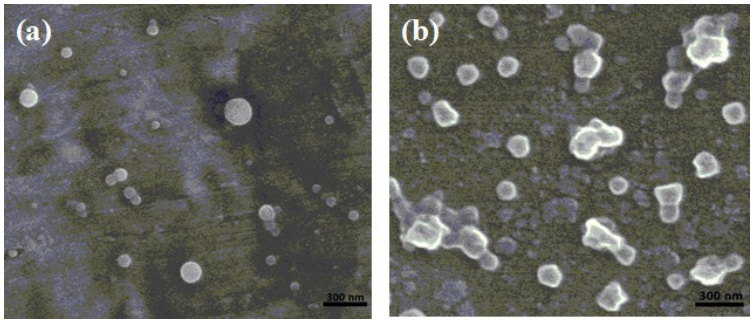
$$\text{Encapsulation efficiency} = 1 - W_{FO}/W \quad (1)$$

W_{FO} is the amount of free oil in the sample slurry and W is the amount of feeding core material.



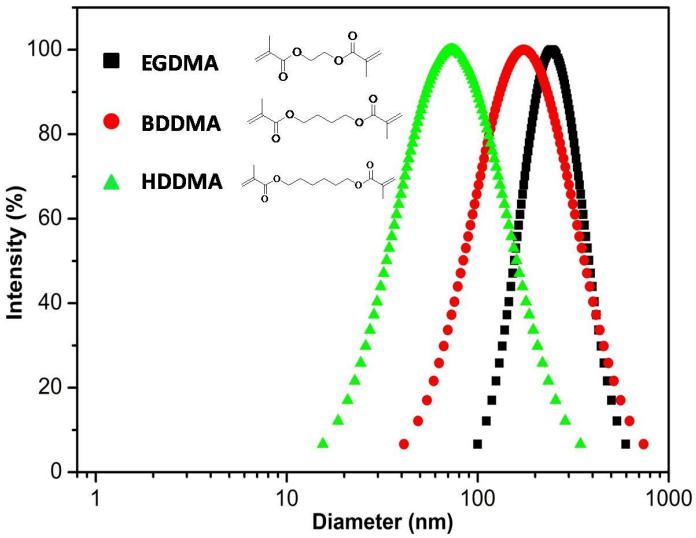
FigureS1 The relationship of encapsulation efficiency and UV-Vis absorbance

2. FE-SEM of nanocapsules



FigureS2. FE-SEM of nanocapsules by (a) BDDMA and (b) HDDMA, the scale bar was 300 nm

3. Particle size and particle-size distribution



FigureS3 Particle size and particle-size distribution of nanocapsules measured by dynamic light scattering