Electronic Supplementary Material (ESI) for Soft Matter

Supporting information for

Synthesis of Microcapsules via Reactive Surfactants.

Adam Limer,[1] Florence Gayet [1], Nicole Jagielski, [1] Alex Heming,[2] Ian Shirley[2] and David M. Haddleton.[1]*

[1]Department of Chemistry, University of Warwick, Coventry, CV4 7AL, UK. Tel: +44 2476523256 and [2]Syngenta, Jealotts Hill Research Station, Bracknell, RG42 6EY.

d.m.haddleton@warwick.ac.uk

I- P(MMA/HEMA) macroinitiators

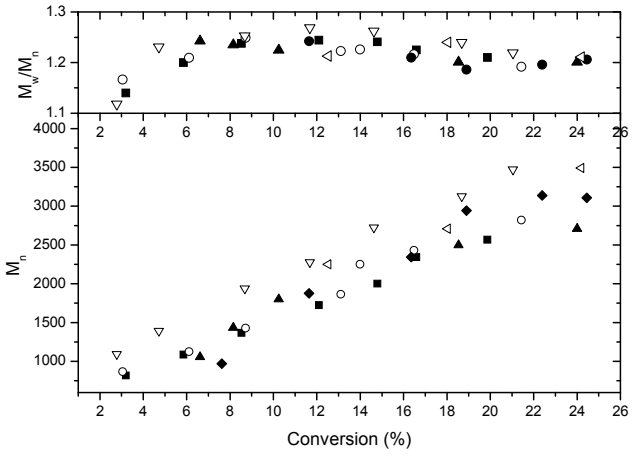

Figure S1A: Evolution of M_n and M_w/M_n with time for the polymerisation of MMA and HEMA using EBIB as initiator at 75^0C in toluene (50% v/v). (■) [MMA]:[HEMA] = [100]:[0], (○) [MMA]:[HEMA] = [95]:[5], (▲) [MMA]:[HEMA] = [90]:[10], (▽) [MMA]:[HEMA] = [85]:[15], (♦) [MMA]:[HEMA] = [80]:[20], (◁) [MMA]:[HEMA] = [70]:[30].

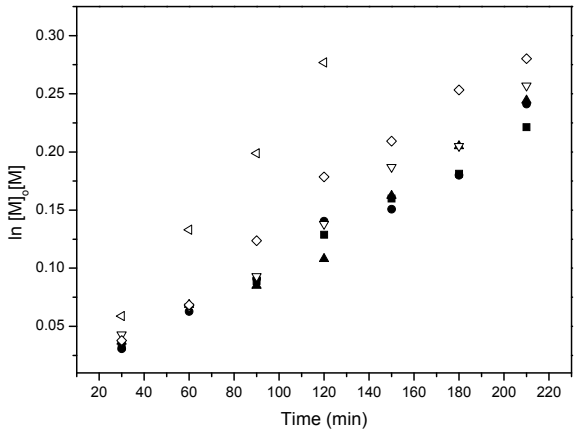

Figure S1B: First-order kinetic plot for the polymerisation of MMA and HEMA at 75^oC in toluene (50% v/v). (■) [MMA]:[HEMA] = [100]:[0], (●) [MMA]:[HEMA] = [95]:[5], (▲) [MMA]:[HEMA] = [90]:[10], (▽) [MMA]:[HEMA] = [85]:[15], (◊) [MMA]:[HEMA] = [80]:[20], (◁) [MMA]:[HEMA] = [70]:[30].

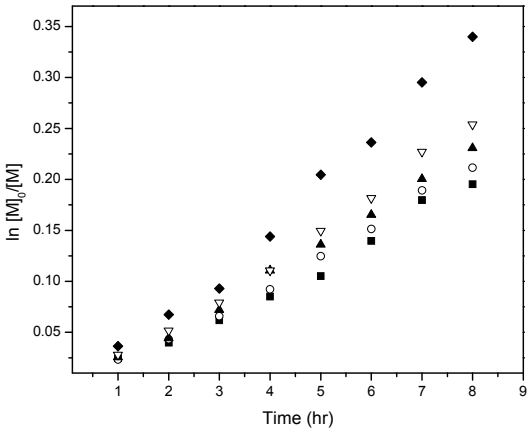

Figure S2A: First-order kinetic plot for the polymerisation of MMA and HEMA at 70°C in toluene (50% v/v) with a poly(ethylene) glycol initiator DP 113. (■) [MMA]:[HEMA] = [100]:[0], (○) [MMA]:[HEMA] = [95]:[5], (▲) [MMA]:[HEMA] = [90]:[10], (▽) [MMA]:[HEMA] = [85]:[15], (♦) [MMA]:[HEMA] = [80]:[20]

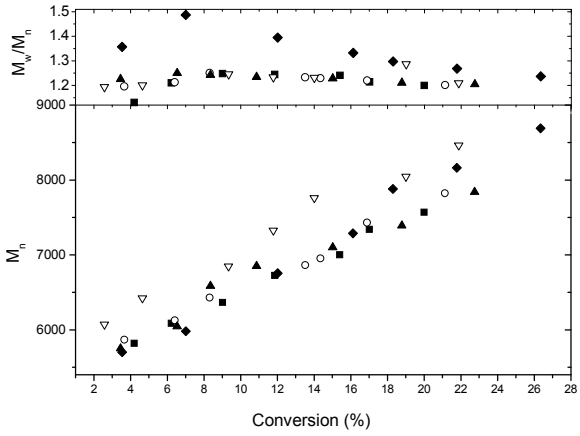

Figure S2B: Evolution of M_n and M_w/M_n with time for the polymerisation of MMA and HEMA at 70°C in toluene (50% v/v) with poly(ethylene) glycol initiator DP 113. (■) [MMA]:[HEMA] = [100]:[0], (○) [MMA]:[HEMA] = [95]:[5], (▲) [MMA]:[HEMA] = [90]:[10], (▽) [MMA]:[HEMA] = [85]:[15], (♦) [MMA]:[HEMA] = [80]:[20]

II- P(MMA/HEMA)-*b*-PDMAEMA polymers

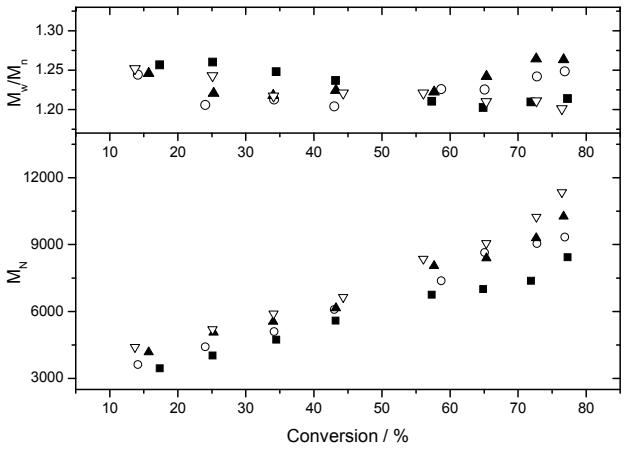

Figure S3: Evolution of M_n and M_w/M_n with time for the polymerisation of DMAEMA with various P(MMA/HEMA) macroinitiators at 100°C in toluene (40% v/v). (■) [MMA]:[HEMA] = [100]:[0], (○) [MMA]:[HEMA] = [95]:[5], (▲) [MMA]:[HEMA] = [90]:[10], (▽) [MMA]:[HEMA] = [85]:[15].

III- ^{1}H-NMR non-ionic inisurf

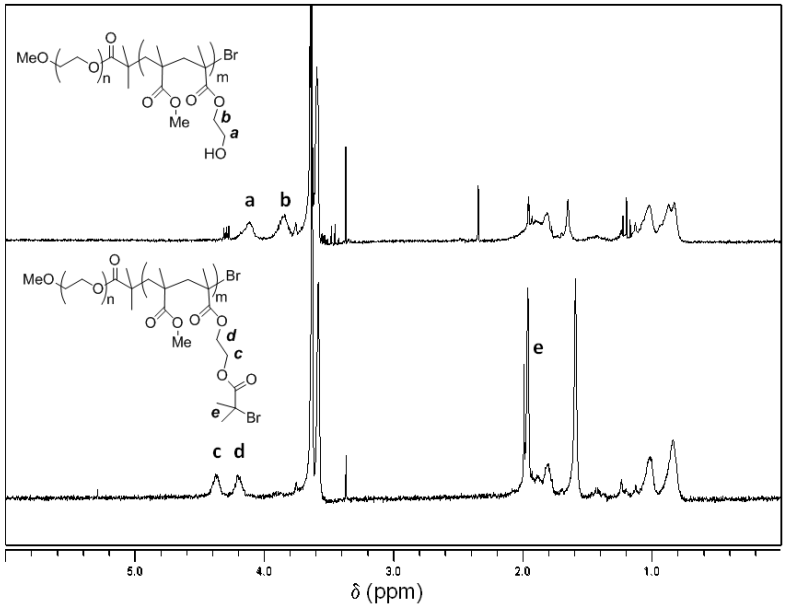

Figure S4: NMR spectrums of PEG-*b*-P(MMA/HEMA) and PEG-*b*-P(MMA/HEMA) non-ionic inisurfs in $CDCl_3$.

IV- Microcapsules Using ionic inisurfs P(MMA/HEMA)-*b*-PDMAEMA

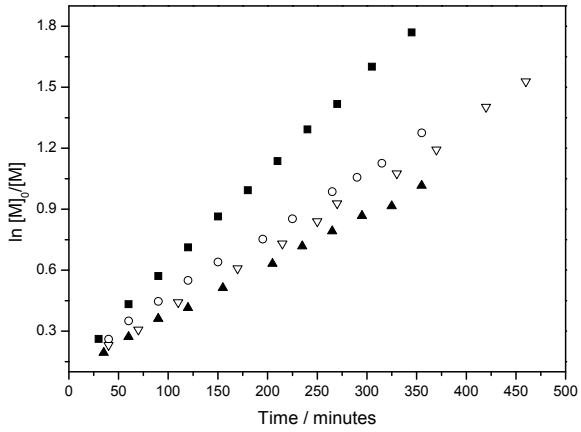

Figure S5: First order kinetic plot for the encapsulation reaction of a P(MMA/HEMA)-*b*-PDMAEMA Inisurf with various concentrations of hexadecane, at 75°C using 2 wt% inisurf with respect to oil phase; P(MMA/HEMA)-*b*-PDMAEMA inisurf ([MMA]:[HEMA] = [85]:[15], PDMAEMA DP = 50, 25% quaternized, P(MMA/HEM DP = 20); [Water Phase]:[Oil Phase] = 3:1. (■) [BMA]:[Hexadecane] = [99]:[1], (○) [BMA]:[Hexadecane] = [93]:[7], (▽) [BMA]:[Hexadecane] = [86]:[14], (▲) [BMA]:[Hexadecane] = [79]:[21].