Electronic Supporting Information

Smart soaps: Stimulus responsive soap-hydrogel bead composites for controlled dissolution and release of actives"

Benjamin R. Thompson, a Marius Rutkevicius, a Tommy S. Horozov, a Simeon D. Stoyanov b,c,d and Vesselin N. Paunov*, a

a School of Mathematics and Physical Sciences (Chemistry), University of Hull, Hull, United Kingdom, Tel: +44 (0)1482 465660; Fax: +441482466410, *E-mail for correspondence: v.n.paunov@hull.ac.uk;

b Unilever R&D Vlaardingen, Olivier van Noortlaan 120, 3133 AT Vlaardingen, the Netherlands;

c Laboratory of Physical Chemistry and Soft Matter, Wageningen University, 6703 HB Wageningen, The Netherlands.

d Department of Mechanical Engineering, University College London, Torrington Place, London WC1E 7JE, UK.

(Materials Chemistry Frontiers, 2018, DOI: 10.1039/c7qm00556c

Description of the enclosed video supplementary materials:

Video S1. Materials for preparation of soap-hydrogel bead composites

Video S2. Formulation of soap-hydrogel bead composites

Video S3. Behaviour of soap-hydrogel bead composites under compression

Video S4. Release of active components encapsulated in soap-hydrogel bead composites
Figure S1. SEM images of a flash-frozen and freeze-dried agar (2.0% w/v) hydrogel sample. The sample were imaged after it was flash-frozen in slush nitrogen, fractured by a blade and then the water content sublimed at -70 °C for 7 minutes. (A) and (B) correspond to different magnifications.

The microstructure of agar hydrogel is known to be largely independent of the agar concentration. We did not observe any difference between 1.0% w/v and 2.0% w/v agar hydrogel morphology upon freeze-drying.
Figure S2. Fitting of the experimental data for berenine release from 50:50 soap:agar hydrogel beads composites at 2% agar concentration in the hydrogel.
Figure S3. Fitting of the experimental data for bernerine release from 50:50 soap:agar hydrogel beads composites at 8% agar concentration in the hydrogel.
Figure S4. Fitting of the experimental data for berberine release from 50:50 soap:agar hydrogel beads composites at 2% agar concentration in the hydrogel and 0.1% PSS.
Figure S5. Fitting of the experimental data for berenine release from 50:50 soap:agar hydrogel beads composites at 2% agar concentration in the hydrogel and 0.25% PSS.