Reverse Vesicles from a Salt-free Catanionic Surfactant System: A Confocal Fluorescence Microscopy Study

Hongguang Li\textsuperscript{a}, Xia Xin\textsuperscript{a}, Tomasz Kalwarczyk\textsuperscript{a}, Ewelina Kalwarczyk\textsuperscript{a}, Patrycja Niton\textsuperscript{a}, Robert Hołyst\textsuperscript{a,b,*}, Jingcheng Hao\textsuperscript{c,*}

\textsuperscript{a} Department III, Institute of Physical Chemistry, Polish Academy of Sciences, Kasprzaka 44/52, 01-224 Warsaw, Poland

\textsuperscript{b} Department of Mathematics and Natural Sciences, College of Science, Cardinal Stefan Wyszyński University, Dewajtis 5, 01-815 Warsaw, Poland

\textsuperscript{c} Key Laboratory of Colloid and Interface Chemistry (Shandong University), Ministry of Education, Jinan 250100, P. R. China

Corresponding authors: jhao@sdu.edu.cn; holyst@ptys.ichf.edu.pl.
**Scheme S1.** Possible reactions of dye Fl in the reverse vesicular phase.
Additional Data

Figure S1. UV-vis absorption of saturated solution of RB in cyclohexane. Note the much lower absorptions compared to the case in reverse vesicular phase shown in the maintext. Measurements on saturated solutions of TA, FS and Fl were unsuccessful due to their extremely low solubilities in cyclohexane.
Figure S2. A typical fluorescence micrograph obtained from a “sealed” sample labelled with Fl whose thickness is ~ 100 µm. Clusters of reverse vesicles are also noticed. The scale bar corresponds to 20 µm.
Figure S3. Typical confocal fluorescence micrographs showing structural evolution from a giant reverse onion to tubular structures.
Figure S4. Typical confocal fluorescence micrographs showing the deformation of a cylindrical giant reverse onion.
Figure S5. Two typical images showing water droplets (arrows) together with clusters of reverse vesicles labelled with four dyes of RB, TA, FS and Fl. Note the water droplet is red due to the presence of TA. While they are dark if TA is absent. The scale bar corresponds to 20 µm.