

Selective Release and Retention of Capsule Loadings through Functionalized Surfactants

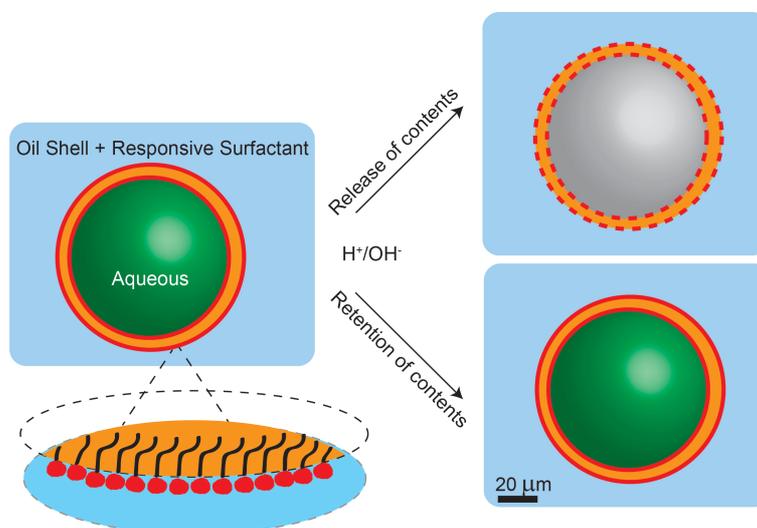
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Selective permeability of cell membranes facilitates active transport of essential molecules upon appropriate stimulation, and this is a fundamental function that ensures viability of cells. Double emulsions mimic such an architecture in that two miscible fluids are separated by an immiscible shell. Despite the apparent immiscibility between the fluids, molecules that are for practical purposes immiscible in the oil are transported across the shell.^{1,2} In this talk, I will demonstrate how this transport can be controlled using newly developed end-functionalized surfactants that impart a pH-responsive release/retention behaviour to the double emulsions. These surfactants can be used to repetitively and controllably load and unload double emulsions, thereby opening up new possibilities to controllably initiate chemical reactions within picoliter-sized reaction vessels.



Graphical Abstract. *pH-Responsive Surfactants that Influence Release/Retention Behaviour of Capsules.*

[1] P. Gruner, B. Riechers, B. Semin, J. Lim, A. Johnston, K. Short, J. C. Baret, *Nat. Commun.*, **2016**, 7, 10392.

[2] J.-W. Janiesch, M. Weiss, G. Kannenberg, J. Hannabuss, T. Surrey, I. Platzman, J. P. Spatz, *Anal. Chem.* **2015**, 87, 2063–2067.