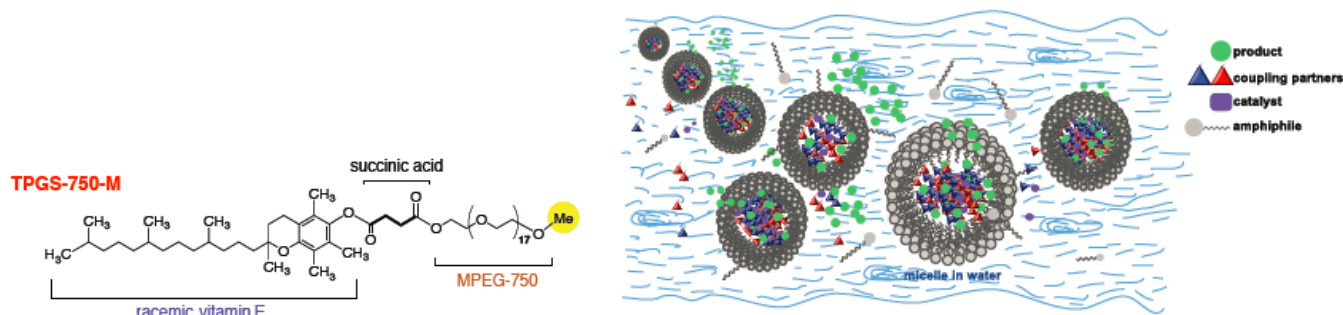


Alternative solvents: from a compliance-driven activity to a trigger for innovation

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During our evaluation of the potential of surfactant technology in collaboration with Professor Lipshutz,(1,2) we have identified a variety of straightforward and highly advantageous transformations and applied them successfully on-scale.(3) Implementation of the technology typically results into significant benefits across our entire portfolio, not just from an environmental standpoint but also from an economic and productivity perspective. To name a few: Reduction of organic solvent consumption, water use and cycle time, milder reaction conditions, improved yields and selectivities, which all contribute to improved process performance and lower manufacturing costs.(4)



Modern no-ionic surfactants for micellar catalysis in water.

These surfactant mediated reactions can be up-scaled in the already existing multi-purpose facilities of pharmaceutical or chemical organizations, using a catalytic amount of a combination of a non-ionic designer surfactant (e.g. TPGS-750-M) in water, and a well-chosen organic co-solvent instead of traditional and undesirable organic solvents.(5)

- [1] See for example: Science 2015, 349, 1087; Ang. Chem. Int. Ed. 2016, 55, 8979; Ang. Chem. Int. Ed. 2016, 55, 4914.
- [2] J. Am. Chem. Soc. 2013, 135, 17707; Org. Lett. 2015, 17, 4734; Org. Lett. 2015, 17, 3968; Org. Proc. Res. Dev. 2016, 20, 1104.
- [3] Green Chem. 2016, 18, 14.
- [4] ACS Sustain Chem. Eng. 2016, asap.
- [5] Org. Proc. Res. Dev. 2016, 20, 1388.