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

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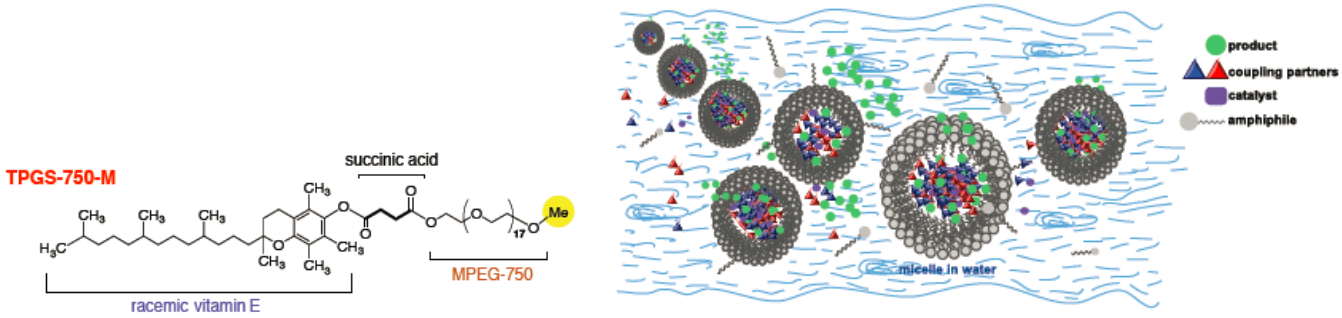
During our evaluation of the potential of surfactant technology in collaboration with Professor Lipshutz,[1,2] we have identified a variety of straightforward and highly advantageous transformations and applied them successfully on-scale.[3] Implementation of the technology typically results into significant 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**, accepted.
[5] *Org. Proc. Res. Dev*. **2016**, *20*, 1388.