Building a toolbox for chemistry using Surfactant in water

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The impact of solvents on the environment, in terms of overall environmental footprint has long been understood. However, until recently, limited significant changes have occurred in the low volume industries and pharmaceutical industry especially. Since more than 5 years, we focused our effort in the use of surfactant in water as sustainable alternative. During the course of this study, a straightforward and highly advantageous technology was seen in several transformations from our portfolio. Specifically, this resulted into significant benefits across our entire synthetic route, not just from an environmental standpoint but also from an economic and productivity perspective. A specific attention has been dedicated to the use of the recently discovered Iron Nanoparticles (Fe-NPs), containing low Palladium level (ca. 100 to 1000 ppm). This technology, when combined with the non-ionic designer surfactant TPGS-750-M in water as medium instead of traditional organic solvents offers a very valuable alternative to the commonly used reaction conditions. Several examples using these technologies will be presented showing its practicability and the diversity of transformation at both lab and Kilo-lab scale.