Next Generation Technologies: Chemistry in Water

Differentiating technologies for sustainable manufacturing of APIs and intermediates

OUR FOOTPRINT TARGET: By 2030, we will reduce our production waste by 10%.

EVONIK
Leading Beyond Chemistry

SITUATION

- Organic solvents, commonly used in the synthesis of active pharmaceutical ingredients (APIs), are contributing substantially to the carbon footprint of the manufacturing process.
- Minimizing organic solvent consumption can reduce the carbon footprint, process waste and process hazards. In water, micellar catalysis can be used to make processes more efficient and offer further sustainability benefits.

COMPLICATION

- Substrates, reagents and products in pharmaceutical chemistry are typically poorly soluble in water and therefore do not react.
- Reactions are often sensitive to solvent effects, and are in some cases also moisture sensitive.

SOLUTION

- Chemistry in Water enables organic reactions to be carried out in aqueous media. Together with our other differentiating technologies, it provides sustainable alternatives to classical processes.
- Also known as "micellar chemistry", Chemistry in Water uses surfactant-forming microscopic spheres (micelles) in water which function as nanoreactors.
- The benefits of Chemistry in Water include waste reduction, improved reaction performance, higher yields and increased selectivity. The mild reaction conditions enabled by Chemistry in Water also help reduce energy consumption for many processes.

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