

Green Chemistry - Development of new synthetic methodologies that use water as the reaction medium (Ramot)

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The Technology

Development of new synthetic methodologies that use water as the reaction medium.

Two directions are presently pursued: the use of amphiphilic block-copolymer ligands for micellar catalysis in water and synthetic organic transformations under the "on water" conditions. Both directions specifically address the recycling of the reaction media, which is essential for the development of "green" synthetic alternatives.

Once such development is our capability of "Salt Control Selectivity in Aqueous Reactions" - dramatic selectivity of the reaction products to a specific target - tipping from a 0% yield to a 100% yield.


The Need

All biologically relevant organic reactions take place in the aqueous media. On the other hand, very few synthetic organic transformations are performed with water as a solvent. Considering that organic solvents often represent the major pollution component of multi-step organic synthesis, their replacement by the environmentally benign water can significantly reduce the amount of chemical waste in synthetic processes.

Supporting Publications

- Sela, T.; Vigalok, A. Salt-Controlled Selectivity in the "on Water" and "in Water" Passerini-Type Multicomponent Reactions, *Adv. Syn. Catal.* 2012, 354, 2407-2411.
- Shapiro, N.; Kramer, M.; Goldberg, I.; Vigalok, A. Straightforward Radical Organic Chemistry in Neat Conditions and "on Water", *Green Chem.* 2010, 12, 582-584.

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