

Parallel reaction screening and automated analysis of solvent effects on homogeneously catalyzed reactions

In this module, participants will plan and perform a set of ten parallel micro-scale reactions using electronic laboratory management system. The reaction outcome will be evaluated using automated analytical tools, providing raw data that will be processed further to assess the effect of solvents on the conversion and selectivity of a given homogeneously catalyzed cross-coupling reaction.

Specifically, the crude reaction mixtures will be analyzed using modern bench-top NMR (nuclear magnetic resonance) as well as GC (gas chromatography). After appropriate work-up, GC, GC-MS, and HPLC analyses will be performed. The scope and limitations of each spectroscopic and chromatographic method will be discussed.

By the end of this module, participants will be able to:

- plan and implement a solvent screening for organic method development
- perform parallel reaction screening using state-of-the-art laboratory technology
- select, implement, and interpret suitable analytical methods