InsightMR

Monitoring Chemical and Biological Processes

InsightMR has a varied portfolio of applications for monitoring chemical and biological processes, to increase understanding of reaction mechanisms, radical formation and cell metabolism.

InsightMR "the classic", enhances reaction understanding, and confidence when transferring processes from the laboratory to the manufacturing plant.

InsightXpress the "Tesla of reaction monitoring" and fastest of the family, enables monitoring of fast reactions and rapid, automated, screening of reaction conditions.

InsightCell monitors living cells to study their biological activity through direct measurement of variations in metabolite concentration.

InsightEPR (on display) is highly complementary to the classic InsightMR, monitoring processes involving radical formation.

InsightMR

The InsightMR flow unit and dedicated software are ideal for both industrial and academic scientists studying or optimizing organic reactions.

The flow unit, equipped with temperature-controlled transfer lines, enables on-line monitoring of chemical reactions in real-time under real conditions. This is achieved by fast and continuous transfer of reaction mixtures from a reaction vessel into the flow tube, which is located in the NMR probe. The InsightMR flow unit is compatible with all 5 mm Bruker probes, making it a cost-effective, versatile solution.

Designed for use by both NMR experts and non-experts, InsightMR software enables straightforward monitoring of reactions in both deuterated and non-deuterated solvents. The system is up and running in minutes; further training is not required!

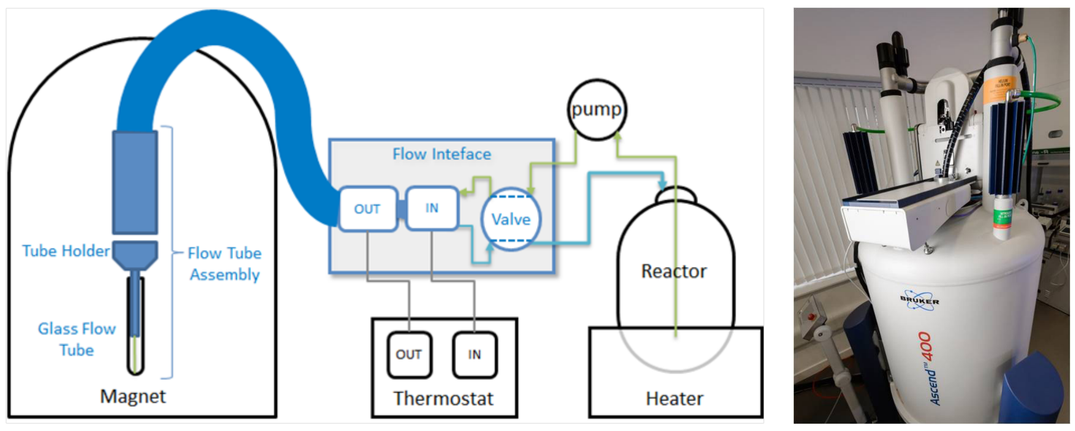

Fig. 1: InsightMR typical laboratory set-up for chemical reaction. From left to right: magnet (300-950 MHz) with flow tube inside, temperature controlled transfer lines, flow interface, thermostat, pump, reactor and heater. On the right hand-side, a 400 MHz Ascend magnet with InsightMR flow unit. Behind the magnet, there is a fume cupboard with the flow interface, a vessel, a pump and a thermostat.

InsightXpress

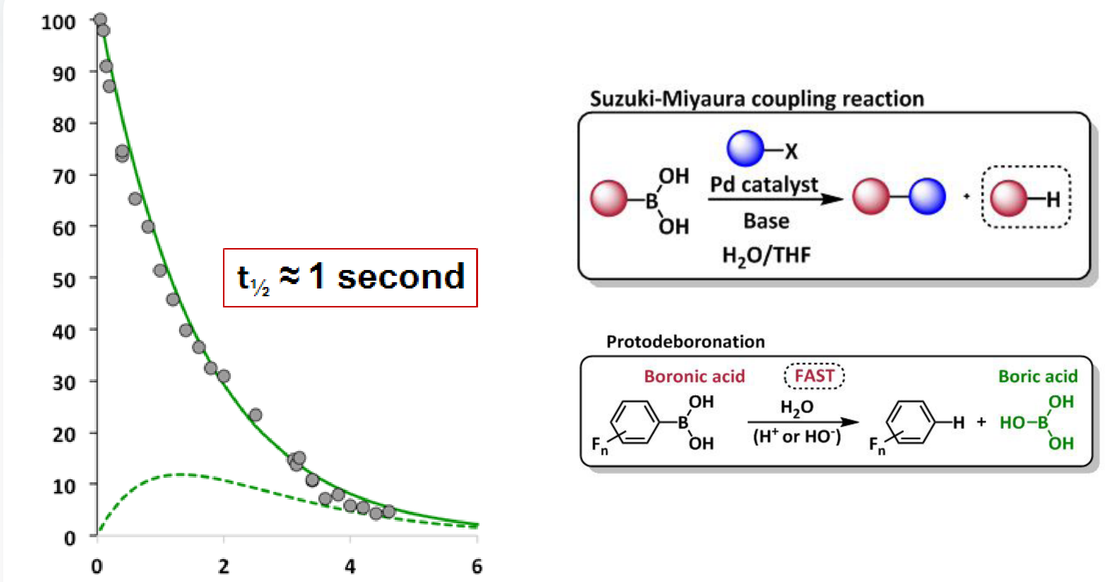

Fig. 2: Right: Suzuki-Miyaura coupling, one of the currently most utilized reactions in industry and it's protodeboronation side reaction. Left: Kinetic profile showing the depletion of one of the reagents, with a half-life time of 1 s! Data acquired by Professor Guy Lloyd-Jones's group with InsightXpress.

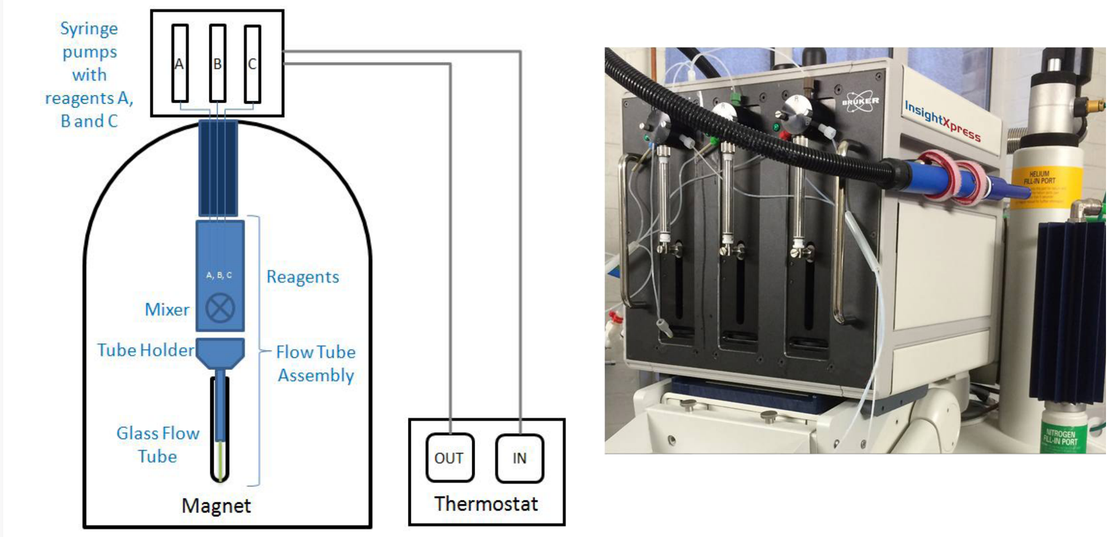

Fig. 3: InsightXpress set-up - magnet with a modified InsightMR unit inside, fast delivery pumps on top of the magnent.

InsightXpress's new stop-flow delivery pumps enable the screening of reaction conditions by NMR at an unprecedented speed. Using InsightXpress, Professor Lloyd-Jones and his co-workers gathered insights into the mechanism and kinetics of the Suzuki-Miyaura protodeboronation side reaction. They were able to monitor the decay of a reagent with half-life time of 1 s!*

Insights into the mechanism and kinetics of chemical reactions are now at your fingertips!

**Find out more details @ ENC poster session PH278*

Summary

- InsightMR portfolio, the next level of process and reaction understanding.
- InsightMR 'classic' for on-line real-time, real laboratory conditions, reaction monitoring.
- InsightXpress for rapid reaction optimization and fast reaction monitoring.