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Continuous Flow Synthesis Gets Hotter!

Raising the reaction temperature achievable with the FlowSyn™ Continuous Flow Reactor has considerably widened the scope of reactions that can be performed, say manufacturers Uniqsis of Cambridge.

Reactions can now be carried out at up to 260ºC and pressures up to 1000psi (~70 Bar). High activation energy chemistries that might previously have required a catalyst or the use of a microwave reactor are now potential candidates for continuous flow synthesis, with its attendant benefits - better reproducibility and scalability and fewer problems with unstable intermediates or unexpected exotherms.

According to Chief Scientific Officer Dr Mark Ladlow, who has recently joined the Uniqsis team: “This opens up a new range of reactions that we can perform with FlowSyn. We ran an aromatic substitution reaction (SNAr) that yielded only about 10% product at 175ºC and got over 90% yield at 250ºC. Comparable results have been reported by Pfizer in the USA.”

Other improvements include easier pump priming and refinements to the automated reaction control so that the user can control the amount of the pre- and post-plug dispersion phases that are collected with their steady state reaction product.

The system can also be further customised to meet customers’ specific requirements. A growing collection of Application Notes published by Uniqsis describes some of the drug discovery chemistries to which FlowSyn has been applied since its introduction last year, including reaction scale-up and optimisation, and a comparison with batch microwave chemistries.