



The **Uniqsis FlowSyn™ continuous flow-through reactor** opens up a whole new world of chemistry:

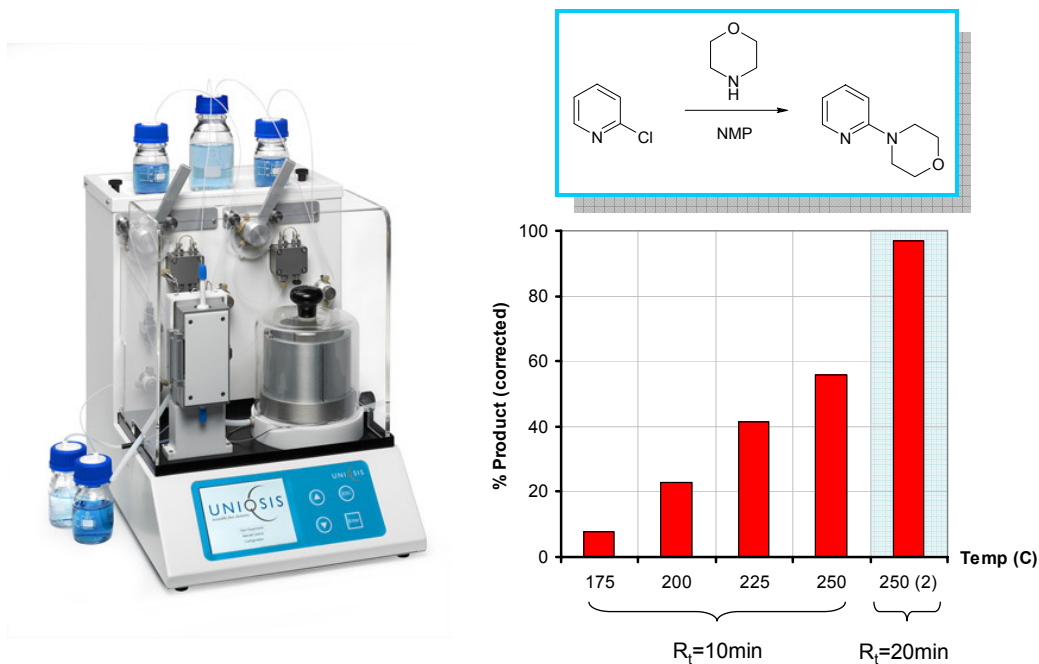
The opportunity to exploit high temperatures and short residence times in combination with continuous processing offers the potential to surmount high activation barriers and thereby accelerate reactions whilst maintaining high purity conversions.

Moreover, the ability to routinely and safely perform chemistry under superheated conditions (up to 260°C and 1000 psi) greatly expands the useful temperature range of common solvents (including water!).

### Chemistry:

The preparation of pharmacologically important 2-amino-pyridines by direct nucleophilic displacement of unactivated 2-chloropyridine requires harsh conditions and is typically low yielding.

This situation can be resolved by the use of metal catalysed cross-coupling conditions, but this necessitates more extensive purification to subsequently remove the metal catalyst.



**Figure 1.**

Alternatively, the direct uncatalysed preparation of 2-morpholinyl-pyridine, for example, may be straightforwardly achieved conversion under continuous throughput conditions by heating a mixture of morpholine and unactivated 2-

chloropyridine to 250°C in NMP for only 20 min (Figure 1).<sup>1</sup> 2-Morpholinylpyridine is obtained in high yield and excellent purity.

FlowSyn™ is able to perform this chemistry safely and automatically, freeing up the user to concentrate on their next discovery.

1. Hamper, B., C.; Tesfu, E.; *Synlett*, **2007**.

### **About the product:**

The Uniqsis FlowSyn is a fully integrated, easy to use continuous flow reactor.

It has been designed for seamless reaction optimisation, synthesis and scale up. Reactions can be carried out at up to 260°C and pressures up to 1000 psi (~70 bar) to mimic microwave reactions without scale up issues.

Efficiency- Unattended operation. System equilibrates, runs reaction and cleans automatically

Safety- All pressurised parts are protected and isolated. Ideal for hazardous or exothermic reactions

Faster reactions- Solvent can be superheated to 260°C

Space saving- Minimum footprint fits easily into fume cupboard

To receive more information about FlowSyn please contact Uniqsis

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Uniqsis- Accessible flow chemistry