

# Asynt

The Asynt logo consists of the word "Asynt" in a white, sans-serif font, followed by a white, stylized, curved shape that resembles a comma or a drop.

## Why use Flow Chemistry?

Martyn Fordham  
Managing Director

[www.asynt.com](http://www.asynt.com)

## Why should I be interested in Flow Chemistry?



Improved reaction control & reproducibility



Efficient mixing & mass transfer for fast reactions & high yield



Enhanced safety plus reduction in waste & material usage



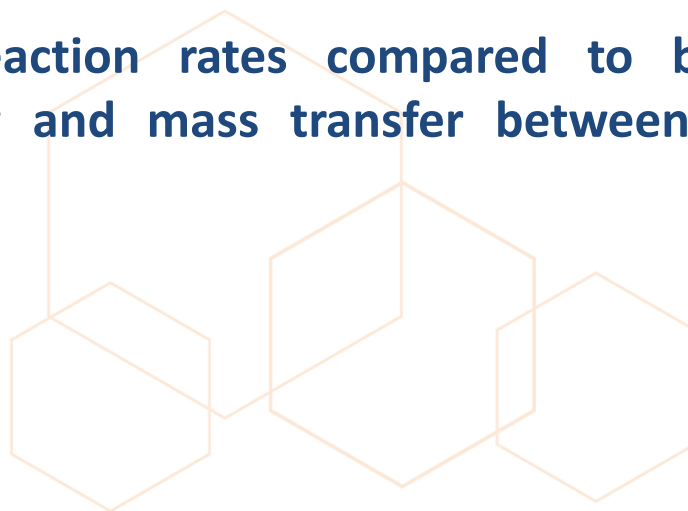
Small volumes possible, thus reducing cost & environmental impact



Scalability with minimal changes to reaction parameters

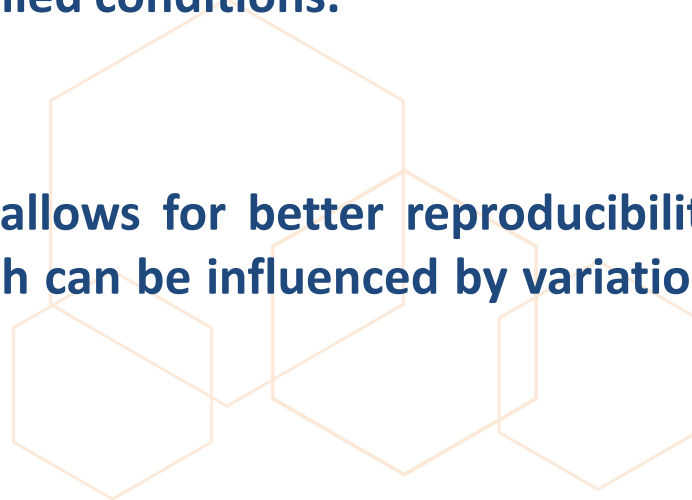
## Faster!

- 2 Get to failure faster - the ability to scale mg to multiple grams without having to optimise for scale as would be the case in batch.
- 2 Flow chemistry is generally more scalable than batch processing, as it is easier to increase the length of the reactor and adjust the flow rate of the reactants.
- 2 Flow chemistry can facilitate higher reaction rates compared to batch processing, due to the improved mixing and mass transfer between the reactants.



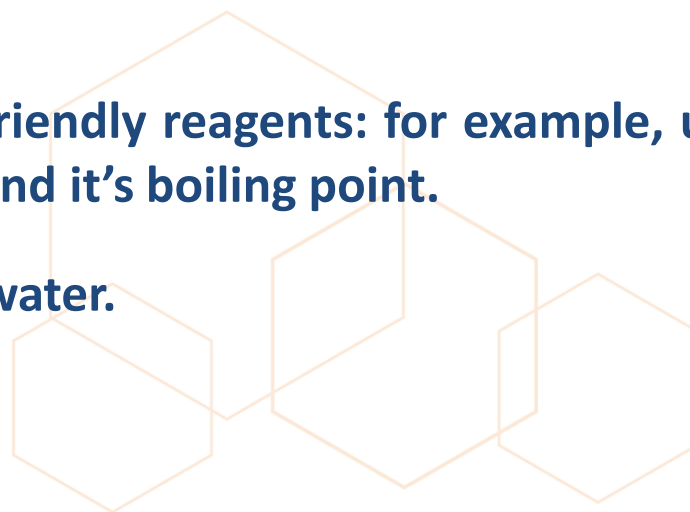
## Better, safer?

- 2 Flow chemistry allows for precise control over reaction conditions, including temperature and pressure, good control of exothermic reactions; better controlled selectivity.
- 2 Safer synthesis of hazardous materials (and hazardous intermediates) by enabling continuous reactions under controlled conditions.
- 2 Multi step continuous processing.
- 2 The continuous nature of flow chemistry allows for better reproducibility of results compared to batch processing, which can be influenced by variations in reaction conditions and reagent handling.



## Sustainability

- 2 Less waste compared to batch processing: the precise control of the reaction conditions allows for the use of smaller amounts of reagents.
- 2 A lower environmental footprint compared to batch processing: it enables the focussed use of energy into the fluid pathway; faster chemistry can be obtained in flow, again reducing energy.
- 2 Enables the use of more environmentally friendly reagents: for example, using ethanol at elevated temperatures way beyond it's boiling point.
- 2 The exploration of flow photochemistry in water.



## It's expensive and hard to get into "Flow"

- 2 Not at all! Simple tools are available.
- 2 Modular systems with a range of capacities & chemical resistance available.
- 2 Choose further accessories as you progress.
- 2 Embrace further instrumentation as you grow to add more sophistication over time.



## Scale in light

- 2 Photochemical reactions in batch are compromised as they are scaled due to the penetration depth of photons.
- 2 Small scale parallel screening in batch works well, but then to scale these Flow is an excellent choice due to short light pathways and the precise control of temperature.
- 2 *Watch this space: a new hybrid batch/Flow device is under development at Asynt.*



## Get Started in Flow: *f*Reactor

Choice of materials

Works with any hotplate stirrer

Simple connections to chosen pump system

Easy to set up & use

Dedicated website [www.freactor.com](http://www.freactor.com) with the latest advice & papers

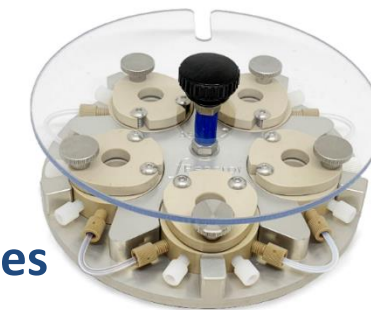


5 CSTR modules for optimal mixing

Inert conditions

Sampling & additions

Designed & engineered in the UK



UNIVERSITY OF LEEDS



## Get Started in Flow: HotCoil™

Choice of materials  
PTFE, FEP, SS, HC etc

Daisy chain multiple  
units

Simple connections to  
chosen pump system

Easy to set up & use



Ambient to 260°C

Wide range of  
reactor materials

RS232 & ethernet  
remote control

Designed & engineered  
in the UK

Easily upgraded, fully automatable

## Photochemistry – fReactor Photo Flow

Sits on any standard hotplate

Use 1-5 light units

Micro switch safety cut off

Popular Wavelengths:

- 460 nm (Blue) 10w LED COB chip
- 365 nm (UV) 10w LED COB chip
- \*A full range available to order



Works with the standard fReactor

Up to 8 reactions in parallel

Examples available @ [www.freactor.com](http://www.freactor.com)

Simple to set up and use

Low cost consumables

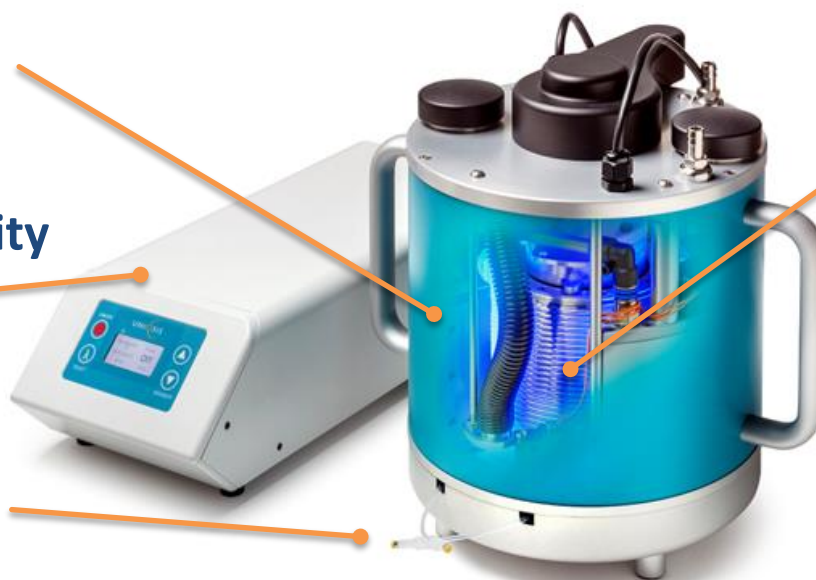
## Photochemistry – PhotoSyn

Curved LED arrays surround coil reactor

700W variable intensity power supply

Zero light leakage with safety interlock

Wavelengths:  
365nm (UV-A), 420nm, 455nm,  
525nm LED arrays



Temperature controlled  
50ml PFA coil reactor

RS232, ethernet and  
USB programmable

Ideal for scale up  
photochemistry

Low cost consumables

## Any questions?

- 🌀 [enquiries@asynt.com](mailto:enquiries@asynt.com)
- 🌀 +44 (0)1638 781709
- 🌀 [www.asynt.com](http://www.asynt.com)