



asia

fast, clean, safe
flow chemistry



www.syrris.com

The Future of Flow Chemistry

Specifications

- **Reactor temperature:** -15°C to +250°C
- **Liquid phase reactor volumes:** 62.5µl, 250µl, 1ml, 4ml, 16ml
- **Solid phase reactor volumes:** 0.7ml, 2.4ml, 5.6ml, 12ml
- **Pressure:** 0 – 20bar (300psi)
- **Flow rate:** 1µl/min – 10ml/min per pump
- **Residence times:** 1 second to multi hour
- **Wetted materials:** Glass, PTFE and PCTFE (stainless steel and hastelloy possible)
- **Mixing:** Rapid diffusion mixing
- **Production volumes:** micrograms to kilograms
- **Automatic leak detection:** Asia can check itself for leaks before running

asia

Asia is a revolutionary range of advanced flow chemistry products from Syrris.

It has been designed by chemists for chemists to enable the widest variety of chemical reactions and ultimate ease of use. The proprietary technology allows automated experiments with or without a PC. Asia offers maximum chemical resistance with an extensive range of temperatures, pressures, and reaction times on scales from mg to kg.

Asia 1-series flow chemistry systems are operated manually. This is ideal for chemists with lower budgets or those who prefer not to have automation. There are three pre-configured systems for different levels of price and functionality.

asia 110

2 chemically resistant ultra smooth pump channels

Glass microreactor with heater and cooler

Back pressure controller for super heating

asia 120

Features of 110 plus...

High temperature microreactor heater

Solid phase chemistry reactors and heater adaptor

Preparative scale tube reactor and heater adaptor

asia 130

Features of 120 plus...

Inert solvent/reagent store

2 automated reagent injection loops

Product collector



Asia 110 System

A robust, totally chemically resistant microreactor system for solution phase flow chemistry. Cool to -15°C or superheat reactions up to $+150^{\circ}\text{C}$ and 300psi.

Automated Flow Chemistry

Asia 2-series flow chemistry systems can automatically perform one experiment at a time. Parameters such as reaction temperature, pressure, reagent injections and collection timings are all automated. These systems are ideal for introduction to the world of flow synthesis. There are three pre-configured systems for different levels of price and functionality.

asia 210

Inert solvent/reagent store

2 chemically resistant ultra smooth pump channels

Glass microreactor with heater and cooler

Back pressure controller for super heating

Product collector

Automation of reaction conditions and collection

asia 220

Features of 210 plus...

2 automated reagent injection loops

High temperature microreactor heater

Solid phase chemistry reactors and heater adaptor

Preparative scale tube reactor and heater adaptor

asia 230

Features of 220 plus...

2 additional pump channels

2 additional injection loops

Flow aqueous work-up

Full PC software control

Asia 2-series flow chemistry systems



Asia 210 System

Total automation of reaction temperature, reaction time, flow rates and single product collection.

Process Optimization

Asia 3-series flow chemistry systems can automatically perform process optimization. Parameters such as reaction time, temperature and ratio of reagents can be varied and each reaction collected and analyzed automatically. There are three pre-configured systems for different levels of price and functionality.

asia 310

- Inert solvent/reagent store
- 2 chemically resistant ultra smooth pump channels
- 2 automated reagent injection loops
- Glass microreactor with heater and cooler
- Back pressure controller for super heating
- Automation of reaction conditions
- Automated collector of multiple samples

asia 320

- Features of 310 plus..
- 2 additional pump channels
- 2 additional injection loops
- High temperature microreactor heater
- Solid phase chemistry reactors and heater adaptor
- Preparative scale tube reactor and heater adaptor
- Full PC software control

asia 330

- Features of 320 plus...
- Flow aqueous work-up
- Automated sampler and dilutor for on line analysis

Asia 3-series flow chemistry systems



Asia 320

Fully automated collection of multiple, multi-step reactions in solution or solid phase. Cool to -15°C or superheat up to 250°C. Vary reaction time, flow ratios and temperatures automatically. Perfectly suited to process optimization and then scale up from mg to kg.

Asia Flow Chemistry Benefits

- Easy to use and intelligent
- Manual operation, automation from the front panel, or full PC control
- Maximum chemical resistance
- Compact and modular
- Faster and safer reactions
- Scalable volume of reactions and scalable complexity of chemistry
- Greater reaction selectivity with fewer impurities
- Accurate temperature control
- Rapid mixing
- Easy scale-up

Examples

Suzuki reaction with silica supported Pd-catalyst

- Faster reaction and improved selectivity
- Negligible Pd level in product

Hantzsh pyrrole synthesis

- Faster reaction and improved yields
- One-step process

Gold nanoparticle synthesis

- Narrower particle distribution
- Safe corrosive reagent handling

N-alkylation of a primary amine

- Faster reaction and excellent mono-alkylation selectivity

modules

	Manual Flow Chemistry			Auto Flow Chemistry			Process Optimization		
	asia 110	asia 120	asia 130	asia 210	asia 220	asia 230	asia 310	asia 320	asia 330
Pressurized Input Store	○	○	●	●	●	●	●	●	●
Pump (2 Channels)	●	●	●	●	●	2	●	2	2
Reagent Injector	○	○	●	○	●	2	●	2	2
Chip Climate Controller	●	●	●	●	●	●	●	●	●
Heater	○	●	●	○	●	●	○	●	●
Heater Chip Adaptor	○	●	●	○	●	●	○	●	●
Heater Column Adaptor	○	●	●	○	●	●	○	●	●
Heater Tube Adaptor	○	●	●	○	●	●	○	●	●
Pressure Controller	●	●	●	●	●	●	●	●	●
FLLEX	○	○	○	○	○	●	○	○	●
Asia Sampler and Dilutor	○	○	○	○	○	○	○	○	●
Product Collector	○	○	●	●	●	●	○	○	○
Automated Collector	○	○	○	○	○	○	●	●	●
Automator	○	○	○	●	●	2	●	2	2
Asia Manager PC Software	○	○	○	○	○	●	○	●	●

● standard ○ option

Sample Introduction

Asia systems can operate in continuous production mode where reagents flow through the chemically resistant pumps or can operate in small-scale synthesis mode where reagents can automatically be injected through loops.

Asia Pressurized Input Store

This module pressurizes four bottles with an inert gas enabling the use of air sensitive reagents and eliminates bubble formation when pumping.



Asia Pump (2 Channels)

Two extremely chemically resistant continuous flow pumps deliver ultra smooth flow from 1 μ l/min to 10ml/min each. Rated 20 bar (300psi) with integrated PTFE pressure sensor.



Asia Reagent Injector

Two injection valves with injection loop volumes of 1ml, 5ml or 10ml which can be controlled manually or fully automated.



Flow Reactors

Asia offers a wide range of reactor sizes in both solution phase and solid phase chemistry for reaction optimization or preparative synthesis.

Asia Glass Microreactors

Designed specifically for flow chemistry, Asia microreactors offer excellent chemical resistance, high pressure, wide temperature range, high visibility and rapid mixing. Available in 62.5 μ l, 250 μ l or 1ml.



Asia Tube Reactors

Available in PTFE or Stainless Steel and in sizes of 4ml or 16ml, these reactors are ideal for scale up applications.



Asia Solid Phase Reactors

Designed for the use of solid phase reagents, catalysts and scavengers. These clip onto the Asia Heater.



Temperature Controllers

Asia offers heating and cooling of microreactors using the climate controller and a flexible high temperature heater that can accept clip-in adaptors for solid phase column reactors, large scale tube reactors or glass microreactors.

Asia Chip Climate Controller

This Peltier based system enables glass microreactors to be cooled or heated from -15°C to +150°C without the need for a circulator or cold water supply.



Asia Heater

This module has adaptors that can be changed in seconds to heat glass microreactors, tube reactors or solid phase reactors. Temperature range from room temperature to 250°C.



Post Reaction

To enable super heating, the pressure controller is located after the flow reactor. Other post reaction options include aqueous work-up and/or on-line sampling of the reaction.

Asia FLEX

The Flow Liquid Liquid EXTRACTION (FLEX) offers continuous flow aqueous work up.



Asia Pressure Controller

To enable ultra fast reaction rates, the pressure controller automatically regulates a laboratory gas supply to pressurize the flowing reaction up to 20bar (300psi).



Asia Sampler and Dilutor

This module automatically takes a 5µl sample from the flowing reaction, dilutes it and flows it into a UPLC/LCMS system allowing on line analysis of every reaction.



Product Collection

Asia allows manual collection, automated collection of one reaction or collection of multiple experiments, even without a PC.

Asia Product Collector

Controlled by the Asia Syringe Pump, the Product Collector enables waste to be diverted and can be used to automatically collect one reaction product, or manually collect many samples.



Asia Automated Collector

Controlled by the Asia Syringe Pump or Asia Manager PC Software, the Automated Collector enables multiple reactions to be collected in a separate vials or vessels, with waste automatically diverted.



Automation

Choose the Asia 110, 120 or 130 for manually controlled systems. For automation from the Asia Pump choose the Asia 210, 220 or 310 systems. For full PC control of multi-reactor systems, choose the Asia 230, 320 or 330 systems.

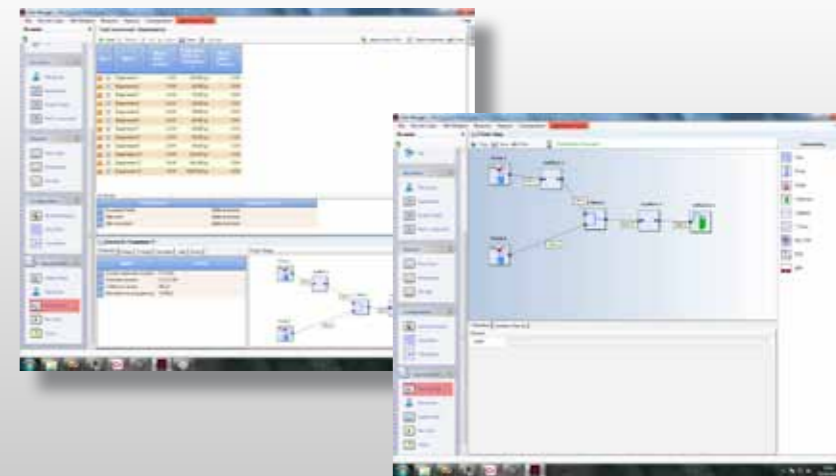
Asia Automator

Connect all the modules to the Automator to allow the Asia Syringe Pump or PC Software to control all the modules to automate reactions.



Asia Manager PC Software

Connect the Asia Automator to a PC and use the Asia Manager Software to fully automate all experiments with data logging and graphing.



Asia is designed and manufactured by Syrris, the world's longest established provider of laboratory scale flow chemistry systems.

Syrris' network of offices in the UK, USA, Japan, India and Brazil plus over 35 distributors worldwide offer local service and support.

**Contact us now at:
www.syrris.com**



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