



asia

каталог 2013/14

flow chemistry reactors 2013/14



СинЭкс - эксклюзивный представитель Syrris в РФ  
[www.sineks.ru](http://www.sineks.ru) // +7 (495) 223-18-03



The Future of Flow Chemistry

## What is 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 a variety of flow chemistry modules and systems making it ideal for both beginners with modest budgets and experts who demand the utmost functionality.

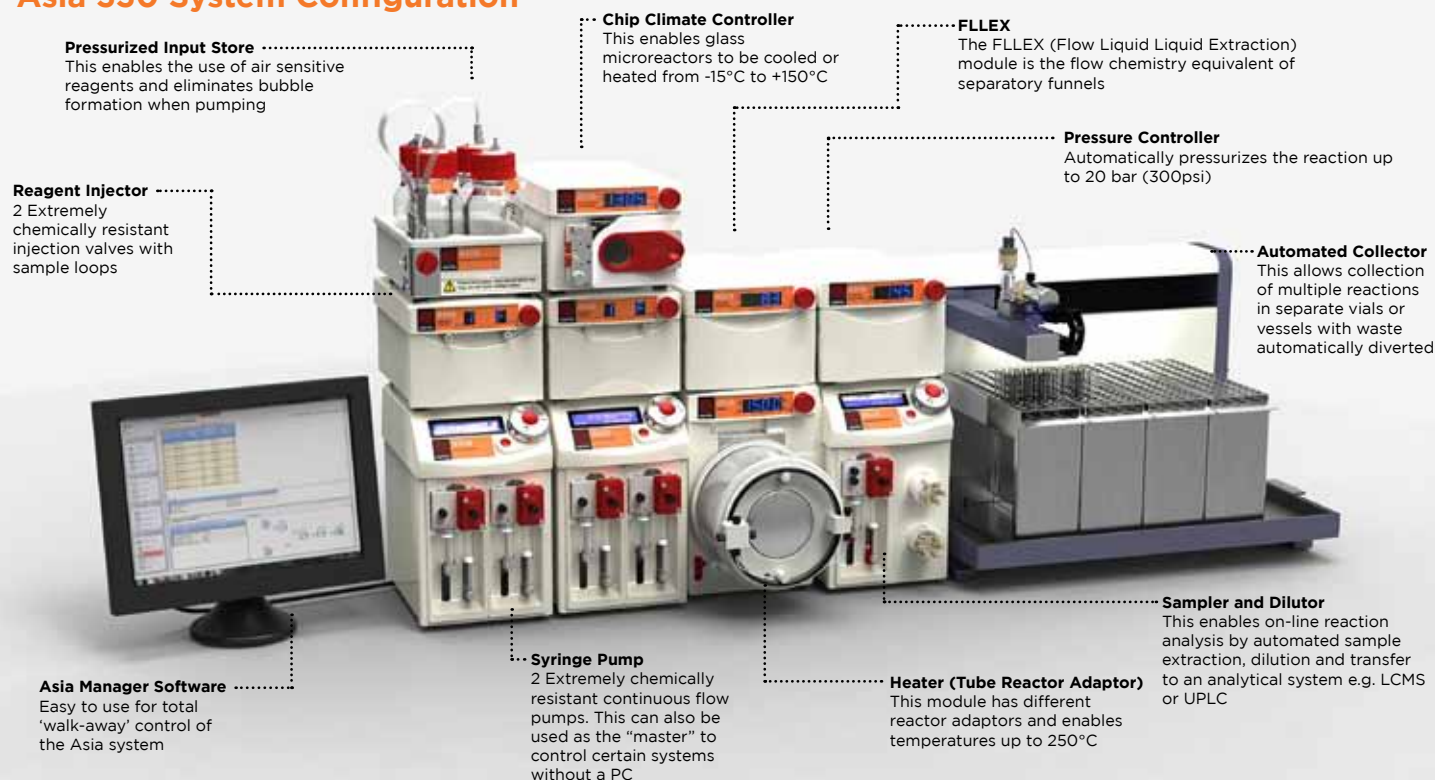


Asia has received an esteemed R&D 100 Award, a benchmark of excellence, with winners chosen by an independent panel of judges. This award recognizes Asia's advanced functionalities, ease of use and applicability to an extremely wide range of chemistries. It also honours Syrris' contribution to a technology that is enabling chemists to perform faster, safer and cleaner reactions.

### Asia Benefits

- **Wider range of chemistries:** Perform reactions that cannot be performed in batch and access new chemical space.
- **Integration of synthesis, work-up and analysis:** The Flow Liquid Liquid Extraction Module (FLLEX) enable two immiscible phases to be mixed and separated in flow immediately following the reaction. Samples can be taken in real time, diluted and injected into an LCMS / UPLC.
- **Safer reactions:** Only small amounts of material react at any time, minimizing exotherms and the quantity of any hazardous intermediates.
- **Cleaner Reactions:** Reduced impurities via excellent, reproducible reaction control and optional use of solid phase reagents/catalysts/scavengers.
- **More reactions in less time:** Multiple-step, multiple-day and difficult batch synthesis can be performed in one process and shortened to a matter of minutes.
- **Maximum chemical resistance:** Glass and PTFE reactors allow a wide range of chemistry at a large range of temperatures and pressures.
- **Ideal for synthesis, rapid optimization and scale-up:** Asia's design allows successive experiments on a multitude of scales, from milligrams to grams to kilograms, all on the same instrument.
- **Robust and easy to use:** Designed by chemists for chemists, the chemically resistant system can be controlled in 3 ways: manually, automated from the Asia Syringe Pump or automated from a computer.

### Asia 330 System Configuration



# contents

<b>Systems</b>	<b>4</b>
Manual Flow Chemistry Systems	
Asia 110	6
Asia 120	7
Asia 130	8
Automated Flow Chemistry Systems	
Asia 210	9
Asia 220	10
Asia 230	11
Process Optimization Flow Chemistry Systems	
Asia 310	12
Asia 320	13
Asia 330	14
<b>Modules</b>	<b>16</b>
Asia Syringe Pump	16
Asia Pressurized Input Store	17
Asia Reagent Injector	17
Asia Climate Controller	18
Asia Pressure Controller	18
Asia Heater	19
Asia Micro FLLEX	20
Asia Sampler and Dilutor	21
Asia Product Collector	21
Asia Automated Collectors	22
Asia Automator	23
Asia Manager PC Software	24
Chemistry Application Support	24
<b>Flow Reactors</b>	<b>25</b>
Asia Microreactors	26
Asia Quartz Microreactors	27
Asia Micromixer Chip	27
Asia Tube Reactors	28
Asia Solid Phase Reactors	28
<b>Accessories</b>	<b>31</b>
<b>Flow Chemistry Guide</b>	<b>38</b>

# systems

Asia is a modular flow chemistry system making it ideal for both beginners with modest budgets and experts who demand the utmost functionality.

Syrris has pre-configured some systems for certain types of chemistry:

- For manually operated flow chemistry, the Asia 1-series
- For automation of one flow experiment, the Asia 2-series
- For total automation of process optimization, the Asia 3-series

Every system includes the Asia Syringe Pump – the most sophisticated flow chemistry pump available.

## Levels of automation

	Manual Operation	System Controlled by Pump	System Controlled by PC Software
Asia 110	✓	●	●
Asia 120	✓	●	●
Asia 130	✓	●	●
Asia 210	✓	✓	●
Asia 220	✓	✓	●
Asia 230	✓	x	✓
Asia 310	✓	✓	●
Asia 320	✓	x	✓
Asia 330	✓	x	✓

✓ Included by default

● Easily possible with an upgrade

x Not possible



СинЭкс - эксклюзивный представитель Syrris в РФ  
[www.sineks.ru](http://www.sineks.ru) // +7 (495) 223-18-03



## Asia 1-series flow chemistry



### 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 2-series flow chemistry



### 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 3-series flow chemistry



### 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 diluter for on line analysis

**Asia 110**

**Asia 110 is an excellent value, entry level system, ideal for beginners in solution phase flow chemistry. This very compact system combines the high performance of an Asia Pump, an Asia Chip Climate Controller, a glass microreactor ("chip") and an Asia Pressure Controller.**

The Asia Pump offers two ultra smooth, chemically resistant, continuous flow channels with wide flow rate ranges and built-in pressure sensors. The Asia Chip Climate Controller provides quick and accurate temperature control from -15°C to +150°C without the need for a circulator or water cooling. The Asia Pressure Controller allows reactions to be pressurized up to 20 bar (300psi). This enables temperatures far in excess of the atmospheric boiling point of the solvent, and therefore an increase in reaction rate.

All the modules can be controlled by the intuitive twist and click knobs and data such as flow rate, pressure and temperature is displayed on the front panels. By entering data such as reaction time and reactor volume, the pump automatically controls the flow rate and indicates when the reaction is available for collection. Safety features include an automatic leak check and safety shutdown in the case of over pressurization of the system.

Asia 110 offers faster, cleaner and safer reactions.

**A standard Asia 110 System contains:**

Description	Part Number
Asia Pump (2 Channels, No Syringes)	2200292
Asia Chip Climate Controller	2200526
Asia Pressure Controller	2200532
Chip Header	2100147
Asia Syringes x 2	2 x (2200391-4)
Asia 110 Tubing Kit	2200538
Microreactor Chip (62.5µl, 250µl or 1000µl)	see reactors



## Asia 120

**Asia 120 expands the range of available chemistries offered by Asia 110 by adding the versatile Asia Heater module (and its adaptors), tube reactors for larger scale chemistry and column reactors for solid phase chemistry.**

In addition to all the features of the 110, Asia 120 can heat microreactor chips up to 250°C, fluoropolymer tube reactors up to 125°C, stainless steel tube reactors up to 250°C or solid phase column reactors up to 150°C. These temperature ranges, combined with the Asia Pressure Controller enable significantly increased reaction rates.

The Asia Heater has a range of adaptors for the different reactor styles. The adaptors are interchangeable in seconds without the need for tools and are automatically recognized by the Asia Heater. They contain embedded RTD's for extremely accurate temperature control of the reaction. Asia 120 offers a wide range of reactor styles, volumes and temperatures and is ideal for chemists who want to perform a wide range of chemistries with a modest budget.

## A standard Asia 120 System contains:

Description	Part Number
Asia Pump (2 Channels, No Syringes)	2200292
Asia Chip Climate Controller	2200526
Asia Heater	2200527
Asia Pressure Controller	2200532
Chip Header x 2	2100147
Asia Yellow or Green Syringes x 2	2 x (2200391-2)
Asia Blue or Red Syringes x 2	2 x (2200393-4)
Asia 120 Tubing Kit	2200539
Asia Heater Solid Phase Adaptor	(see page 19)
Asia Heater Microreactor Adaptor	(see page 19)
Asia Heater Tube Reactor Adaptor	(see page 19)
2 x Microreactor Chip (62.5µl, 250µl or 1000µl)	see reactors
Asia 4ml or 16ml Tube Reactor	see reactors
Asia High Temperature Solid Phase Reactor Pack	2200553



The heater is shown here with the Tube Adaptor and tube reactor. See the Asia Heater page for more information.



## Asia 130

**Asia 130 is a comprehensive flow chemistry system that has all the functionality of Asia 120 and also offers pressurized storage of reagents, injection of small quantities of reagent and convenient product collection.**

The Pressurized Input Store gives the possibility of easily handling air and moisture sensitive reagents by pressurizing the bottles with inert gas. It also enhances pumping and smoothness of the liquid flow by minimizing cavitation and bubble formation. The Asia Reagent Injector module enables the chemist to manually load small quantities of reagent into sample loops and then conveniently inject samples into the flowing stream.

The Product Collector enables the solvent between reactions to be diverted to waste and the reaction samples to be conveniently collected in a range of vials. This combination enables a fast, manual reaction optimization process. Further scale-up can be achieved using the Asia Heater and a tube reactor.

Asia 130 offers an extremely comprehensive range of flow chemistry.

## A standard Asia 130 System contains:

Description	Part Number
Asia Pump (2 Channels, No Syringes)	2200292
Asia Pressurized Input Store	2200400
Asia Reagent Injector	2200520
Asia Chip Climate Controller	2200526
Asia Heater	2200527
Asia Pressure Controller	2200532
Asia Product Collector	2200534
Chip Header x 2	2100147
Asia Yellow or Green Syringes x 2	2 x (2200391-2)
Asia Blue or Red Syringes x 2	2 x (2200393-4)
Asia 130 Tubing Kit	2200540
Asia Heater Solid Phase Adaptor	(see page 19)
Asia Heater Microreactor Adaptor	(see page 19)
Asia Heater Tube Reactor Adaptor	(see page 19)
3 x Microreactor Chip (62.5µl, 250µl or 1000µl)	see reactors
2 x 4ml or 16ml Tube Reactor Fluoropolymer or Stainless Steel	see reactors
Asia High Temperature Solid Phase Reactor Pack	2200553



**СинЭкс - эксклюзивный представитель Syrris в РФ**  
[www.sineks.ru](http://www.sineks.ru) // +7 (495) 223-18-03



## Asia 210

**Asia 210 is Syrris' entry level system for totally automated synthesis of a solution phase reaction. Centrally controlled by the intelligent Asia Pump and Asia Automator, the Asia 210 system also includes a Pressurized Input Store, Glass Microreactor Chip, Chip Climate Controller, Pressure Controller and Product Collector.**

Performing walk-away synthesis has never been so easy. Enter reactor volume, desired temperature and pressure, collection volume and desired ratio of the reagents, then press start. The system automatically performs the synthesis, diverts the waste and starts and stops the collection exactly when the reaction product reaches the Product Collector.

The Asia Pump offers two ultra smooth, chemically resistant continuous flow channels with wide flow rate ranges and built-in pressure sensors. The Pressurized Input Store gives the possibility of handling air and moisture sensitive reagents by pressurizing the bottles with inert gas. It also improves pumping and smoothness of the liquid flow by minimizing cavitation and bubble formation. The Asia Chip Climate Controller provides quick and accurate temperature control from -15°C to +150°C without the need for a circulator or water cooling. The Asia Pressure Controller, allows reactions to be pressurized up to 20 bar (300psi). This enables temperatures far in excess of the atmospheric boiling point of the solvent, and therefore an increase in reaction rate.

All the modules can either be controlled individually from the twist and click knobs or fully automated by the Asia Pump and Asia Automator. In both modes, data such as flow rate, pressure and temperature are displayed on the front panels. Asia 210 offers chemical reactions with temperatures from sub-zero to superheated 'microwave-like' reactions, residence times from minutes to several hours and scales from a few mg to large scale continuous synthesis.

Asia 210 is for chemists who demand a high performance introduction to automated flow chemistry.

## A standard Asia 210 System contains:

Description	Part Number
Asia Pump (2 Channels, No Syringes)	2200292
Asia Pressurized Input Store	2200400
Asia Chip Climate Controller	2200526
Asia Pressure Controller	2200532
Asia Product Collector	2200534
Asia Automator	2200536
Chip Header	2100147
Asia Syringes x 2	2 x (2200391-4)
Asia 210 Tubing Kit	2200555
Microreactor Chip (62.5µl, 250µl or 1000µl)	see reactors



**СинЭкс - эксклюзивный представитель Syrris в РФ**  
[www.sineks.ru](http://www.sineks.ru) // +7 (495) 223-18-03

## Asia 220

**The Asia 220 system provides all the benefits of Asia 210 but also expands the chemistry capabilities even further by adding the Reagent Injector, versatile Asia Heater module (and its adaptors), tube reactors for larger scale chemistry and column reactors for solid phase chemistry.**

In addition to all the features of the 210 system, Asia 220 can heat microreactor chips up to 250°C, fluoropolymer tube reactors up to 125°C, stainless steel tube reactors to 250°C or solid phase column reactors up to 150°C. These temperature ranges, combined with the Asia Pressure Controller enable significantly increased reaction rates.

The Asia Heater has a range of adaptors for the different reactor styles. The adaptors are interchangeable in seconds without the need for tools and are automatically recognized by the Asia Heater. They contain embedded RTD's for extremely accurate temperature control of the reaction.

The Asia Reagent Injector module enables small quantities of reagent (1ml, 5ml or 10ml) to be loaded into sample loops then conveniently injected into the flowing stream.

Asia 220 offers total automation of an experiment with a wide range of reactor styles, volumes and temperatures and is ideal for chemists who want to perform a wide range of chemistries with minimal effort.

## A standard Asia 220 System contains:

Description	Part Number
Asia Pump (2 Channels, No Syringes)	2200292
Asia Pressurized Input Store	2200400
Asia Reagent Injector	2200520
Asia Chip Climate Controller	2200526
Asia Heater	2200527
Asia Pressure Controller	2200532
Asia Product Collector	2200534
Asia Automator	2200536
Chip Header x 2	2100147
Asia Yellow or Green Syringes x 2	2 x (2200391-2)
Asia Blue or Red Syringes x 2	2 x (2200393-4)
Asia 220 Tubing Kit	2200556
Asia Heater Solid Phase Adaptor	(see page 19)
Asia Heater Microreactor Adaptor	(see page 19)
Asia Heater Tube Reactor Adaptor	(see page 19)
2 x Microreactor Chip (62.5µl, 250µl or 1000µl)	see reactors
2 x 4ml or 16ml Tube Reactor Fluoropolymer or Stainless Steel	see reactors
Asia High Temperature Solid Phase Reactor Pack	2200553



**СинЭкс - эксклюзивный представитель Syrris в РФ**  
[www.sineks.ru](http://www.sineks.ru) // +7 (495) 223-18-03



### Asia 230

**Asia 230 is a comprehensive flow chemistry system that has all the functionality of Asia 220 and also offers two extra pump channels, two extra injection valves (with loops), flow liquid-liquid extraction and full automation of an experiment from the PC software. The Asia 230 enables an automated multi-step reaction.**

With its four pump channels, four injection loops, Chip Climate Controller and Heater, the Asia 230 can be used to perform multi-step reactions (homogenous or heterogeneous) with up to four different air-sensitive reagents.

The addition of an Asia FLLEX (Flow Liquid Liquid Extraction) module enables continuous aqueous work-up. It mixes the organic and the aqueous streams, then allows time for diffusion to occur before finally splitting the flow back to its constituent parts.

A computer with the Asia Manager PC Software preinstalled is included for further control of all the modules. With its intuitive interface, the software makes it easy to set-up a fluidic system, design an experiment and run the chemistry. The Asia Manager PC Software is the most sophisticated and powerful software available for flow chemistry.

A standard Asia 230 System contains the following:

Description	Part Number
Asia Pump (2 Channels, No Syringes) x 2	2200292
Asia Pressurized Input Store	2200400
Asia Reagent Injector x 2	2200520
Asia Chip Climate Controller	2200526
Asia Heater	2200527
Asia FLLEX	2200531
Asia Pressure Controller	2200532
Asia Product Collector	2200534
Asia Automator x 2	2200536
Asia Manager PC Software	2200537
PC with Monitor and Mouse	2200564
Chip Header x 2	2100147
Asia Yellow or Green Syringes x 2	2 x (2200391-2)
Asia Blue or Red Syringes x 2	2 x (2200393-4)
Asia 230 Tubing Kit	2200557
Asia Heater Solid Phase Adaptor	(see page 19)
Asia Heater Microreactor Adaptor	(see page 19)
Asia Heater Tube Reactor Adaptor	(see page 19)
3 x Microreactor Chip (62.5µl, 250µl or 1000µl)	see reactors
2 x 4ml or 16ml Tube Reactor Fluoropolymer or Stainless Steel	see reactors
Asia High Temperature Solid Phase Reactor Pack	2200553



**СинЭкс - эксклюзивный представитель Syrris в РФ**  
[www.sineks.ru](http://www.sineks.ru) // +7 (495) 223-18-03



### Asia 310

**Asia 310 is a flow chemistry system ideal for process optimization as it allows total automation of up to 99 solution phase experiments with 2 flow inputs.**

Performing walk-away synthesis has never been so easy. Enter reactor volume, desired temperature and pressure, collection volume and desired ratio of the reagents, then press start. The system automatically controls the Syringe Pumps, injects the reagents, performs the synthesis, diverts the waste and starts and stops the collections into different vials exactly when the reaction products reach the Automated Collector.

The Asia Syringe Pump offers two ultra smooth, chemically resistant continuous flow channels with wide flow rate ranges and built-in pressure sensors. The Pressurized Input Store gives the possibility of handling air and moisture sensitive reagents by pressurizing the bottles with inert gas. It also improves pumping and smoothness of the liquid flow by minimizing cavitation and bubble formation.

The Asia Chip Climate Controller provides quick and accurate temperature control from -15°C to +150°C without the need for a circulator or water cooling. The Asia Pressure Controller allows reactions to be pressurized up to 20 bar (300psi) enabling temperatures far in excess of the atmospheric boiling point of the solvent and, as a consequence, increases the reaction rate. The Asia Reagent Injector module enables the chemist to manually load small quantities of reagent into 2 sample loops and then conveniently inject samples into the flowing stream.

All the modules are extremely chemically resistant and can either be controlled individually or fully automated by the Asia Pump and Asia Automator. In both modes, data such as flow rate, pressure and temperature is displayed on the front panels. Asia 310 offers chemical reactions with temperatures from sub-zero to superheated 'microwave-like' reactions and residence times from minutes to several hours.

This system is ideal for chemists who wish to carry out fully automated reaction optimization of 2 input reactions in solution phase.

#### A standard Asia 310 System contains:

Modules	Part Number	Accessories	Part Number
Asia Pump (2 Channels, No Syringes)	2200292	Chip Header	2100147
Asia Pressurized Input Store	2200400	Asia Syringes x 2	2 x (2200391-4)
Asia Reagent Injector	2200520	Asia 310 Tubing Kit	2200558
Asia Chip Climate Controller	2200526	3 x Microreactor Chip (62.5µl, 250µl or 1000µl)	see reactors
Asia Pressure Controller	2200532		
Asia Automated Collector (Mini, Regular or Premium)	see collectors		
Asia Automator	2200536		



**СинЭкс - эксклюзивный представитель Syrris в РФ**  
[www.sineks.ru](http://www.sineks.ru) // +7 (495) 223-18-03





### Asia 320

**Asia 320 enables the broadest range of flow chemistry reactions possible coupled with easy-to-use automation. This system enables hundreds of fully automated, multi-step solution or solid phase reactions with a total of four inputs and mg or kg scale reactions.**

Asia 320 provides all the benefits of Asia 310 and expands the chemistry capabilities even further by adding PC software, two extra pump channels, two extra injection valves, the versatile Asia Heater module (and its adaptors), tube reactors for larger scale chemistry and column reactors for solid phase chemistry.

As well as all the features of the 310 system, Asia 320 can heat microreactor chips up to 250°C, fluoropolymer tube reactors up to 125°C, stainless steel tube reactors to 250°C or solid phase column reactors up to 150°C. These temperature ranges, combined with the Asia Pressure Controller enable significantly increased reaction rates.

The Asia Heater has a range of adaptors for the different reactor styles. The adaptors are interchangeable in seconds without the need for tools and are automatically recognized by the Asia Heater. They contain embedded RTD's for extremely accurate temperature control of the reaction.

A computer with the Asia Manager PC Software preinstalled is included for further control of all the modules. With its intuitive interface, the software makes it easy to set-up a fluidic system, design an experiment and run the chemistry.

#### A standard Asia 320 System contains:

Description	Part Number
Asia Pump (2 Channels, No Syringes) x 2	2200292
Asia Pressurized Input Store	2200400
Asia Reagent Injector x 2	2200520
Asia Chip Climate Controller	2200526
Asia Heater	2200527
Asia Pressure Controller	2200532
Asia Automated Collector (Mini, Regular or Premium)	see collectors
Asia Automator x 2	2200536
Asia Manager PC Software	2200537
PC with Monitor and Mouse	2200564
Chip Header x 2	2100147
Asia Yellow or Green Syringes x 2	2 x (2200391-2)
Asia Blue or Red Syringes x 2	2 x (2200393-4)
Asia Pump Pressure Sensor	2200431
Asia Pump Valve	2200432
Asia 320 Tubing Kit	2200559
Asia Heater Solid Phase Adaptor	(see page 19)
Asia Heater Microreactor Adaptor	(see page 19)
Asia Heater Tube Reactor Adaptor	(see page 19)
3 x Microreactor Chip (62.5µl, 250µl or 1000µl)	see reactors
4 x 4ml / 16ml Tube Reactor Fluoropolymer / Stainless Steel	see reactors
Asia High Temperature Solid Phase Reactor Pack	2200553





### Asia 330

**Asia 330 is the ultimate, integrated flow chemistry system. It offers entirely automated reagent injection, synthesis, work-up, product collection and analysis. Asia 330 includes all the benefits of Asia 320 and also adds flow aqueous work-up and the integration of analytical devices such as LCMS.**

It features multiple step and multiple reagent reaction capabilities with its 4 pump channels, 4 reagent injection valves, Chip Climate Controller, Heater (and adaptors), glass microreactors, fluoropolymer tube reactors, stainless steel tube reactors, Pressure Controller, FLLEX, Sampler and Dilutor, Automated Collector, Automator, PC and PC Software.

All the modules are extremely chemically resistant and can either be fully automated by the Asia Manager PC Software or controlled individually.

The Asia FLLEX (Flow Liquid Liquid Extraction) module performs continuous flow aqueous work-up. A FLLEX mixes the organic and the aqueous streams, allows rapid diffusion to occur then splits the flow back to its constituent parts.

The Asia Sampler and Dilutor automatically takes a sample from the reaction and dilutes it by a user defined ratio. It then injects the diluted sample into an LCMS and automatically starts the pumps and data acquisition on the LCMS system. The Asia Sampler and Dilutor can be used in conjunction with virtually any 3rd party chromatography systems (LCMS, GCMS, HPLC, UPLC, etc.). All experiments are designed and run using the Asia Manager PC Software.

The Asia 330 is ideal for chemists who demand the highest quality, highest functionality flow chemistry system available.

#### A standard Asia 330 System contains:

Description	Part Number
Asia Pump (2 Channels, No Syringes) x 2	2200292
Asia Pressurized Input Store	2200400
Asia Reagent Injector x 2	2200520
Asia Chip Climate Controller	2200526
Asia Heater	2200527
Asia FLLEX	2200531
Asia Sampler and Dilutor	2200533
Asia Pressure Controller	2200532
Asia Automated Collector (Mini, Regular, or Premium)	see collectors
Asia Automator x 2	2200536
Asia Manager PC Software	2200537
PC with Monitor and Mouse	2200564
Chip Header x 2	2100147
Asia Yellow or Green Syringes x 2	2 x (2200391-2)
Asia Blue or Red Syringes x 2	2 x (2200393-4)
Asia Pump Pressure Sensor	2200431
Asia Pump Valve	2200432
Asia 330 Tubing Kit	2200560
Asia Heater Solid Phase Adaptor	(see page 19)
Asia Heater Microreactor Adaptor	(see page 19)
Asia Heater Tube Reactor Adaptor	(see page 19)
3 x Microreactor Chip (62.5µl, 250µl or 1000µl)	see reactors
4 x 4ml or 16ml Tube Reactor Fluoropolymer / Stainless Steel	see reactors
Asia High Temperature Solid Phase Reactor Pack	2200553

# modules

Asia is a modular system. All the Asia modules can be purchased separately and arranged in any fashion to add new functionalities to an existing system. Your system evolves with your needs.

The following table shows which modules are in each standard system.

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

● standard ○ option



СинЭкс - эксклюзивный представитель Syrris в РФ  
www.sineks.ru // +7 (495) 223-18-03

### Asia Syringe Pump

2200292

Designed specifically for flow chemistry, the ultra smooth Asia Pump is extremely chemically resistant and is rated to 20 bar (300psi)<sup>†</sup>. This compact microfluidic module offers two independent flow channels each with an integrated pressure sensor and a flow rate range from 1.0µl to 10ml/min.

Produced to the highest specification, the innovative pump is controlled by the easy to use and intuitive front panel (twist and click control knob) or by the Asia Manager PC software.

In either standalone mode or PC software mode, flow rate can be controlled quickly and easily. When used as part of a larger flow chemistry system, the Asia Pump accurately controls and runs complex flow chemistry experiments with the click of a button.

The Asia Pump offers ultimate ease of use. The valves, pressure sensors and syringes can all be unclipped / unscrewed in seconds without the need for tools.

#### Specification:

- **Pressure sensors:** 2
- **Total flow rate range per channel:** 1µl to 10ml/min
  - With Asia yellow syringes\* (50µl/100µl) 1µl to 250µl/min
  - With Asia green syringes\* (250µl/500µl) 5µl to 1.25ml/min
  - With Asia blue syringes\* (500µl/1ml) 10µl to 2.5ml/min
  - With Asia red syringes\* (2.5ml/5.0ml) 50µl to 10ml/min
- **Operating pressure:** 0 to 20 bar<sup>†</sup>
- **Pressure sensors:** display to 0.1 bar
- **Syringe wetted materials:** Glass and PTFE
- **Valve wetted materials:** PTFE and PCTFE
- **Outer materials:** Aluminium, stainless steel and polyurethane sprayed white with highly chemically resistant epoxy paint
- **Active parts anodized red**
- **Dimensions:** H 260mm x W 160mm x D 265mm
- **Display:** 26mm x 88mm led display
- **Voltage input:** 100V to 240V AC

\* Syringes not included with this part number. See accessories.

<sup>†</sup> Note that the Asia Red Syringes may not be appropriate for use at pressures greater than 10bar



**СинЭкс - эксклюзивный представитель Syrris в РФ**  
[www.sineks.ru](http://www.sineks.ru) // +7 (495) 223-18-03

**Asia Pressurized Input Store****2200400**

The Asia Pressurized Input Store is designed for use with the Asia Syringe Pump. It holds up to 4 x 250ml reagent bottles (included) under a pressurized inert atmosphere. This not only enables the use of air and moisture sensitive reagents but also assists in delivering an extremely smooth flow by minimizing input cavitation and gas bubble formation during pumping at high flow rates.

The bottles provided are plastic coated and are fitted with septum caps enabling air and moisture sensitive reagents to be loaded via a cannula.

**Specification:**

- **Accepted pressure range of the gas input:** 1 to 10 bar
- **Regulated output pressure (to bottles):** 1 bar
- **Wetted materials:** Glass and PTFE
- **Outer materials:** Aluminium and stainless steel sprayed white with highly chemically resistant epoxy paint. Polypropylene tray
- **Active parts anodized red**
- **Bottles capacity:** 4 x 250ml
- **Dimensions:** H 230mm x W 160mm x D 245mm (Height with bottles)

**Asia Reagent Injector****2200520**

The Asia Reagent Injector includes 2 extremely chemically resistant injection valves with sample loops (5ml by default, 0.1ml, 1ml and 10ml also available). The sample loops are filled with reagents by syringe through the Luer fittings. Reagent volumes that consist of full or partial loop volumes are injected into the reactor via the automated 6-port, 2 position injection valves. It is possible to switch the valves independently or simultaneously.

The Asia Reagent Injector can be manually controlled from its front panel or automated from an Asia Pump or a PC using the Asia Automator.

**Specification:**

- **Loops volume:** 0.1ml, 1ml, 5ml, 10ml or custom
- **Operating pressure:** 0 to 20 bar
- **Wetted materials:** PTFE and PCTFE
- **Outer materials:** Aluminium, stainless steel and polyurethane sprayed white with highly chemically resistant epoxy paint
- **Active parts anodized red**
- **Dimensions:** H 135mm x W 160mm x D 260mm
- **Display:** Two 13mm x 16mm LED displays with status indicator LEDs
- **Voltage input:** 100V to 240V AC



**СинЭкс - эксклюзивный представитель Syrris в РФ**

[www.sineks.ru](http://www.sineks.ru) // +7 (495) 223-18-03

### Asia Chip Climate Controller

2200526

The Asia Chip Climate Controller enables a range of glass microreactors to be cooled or heated from -15°C to +150°C without the need for an external circulator or cold water supply. The Peltier based system ensures quick and accurate temperature control within a very compact module.

The Asia Chip Climate Controller can be manually controlled from its front panel or automated from an Asia Pump or a PC using the Asia Automator.

#### Specification:

- **Chip temperature:** -15°C to +150°C \*
- **Temperature set to 1°C and displayed to 0.1°C**
- **Accuracy:** +/- (0.15°C + 0.002T) where T is temperature in °C
- **Chips accepted:** 62.5µl, 250µl, 1ml and micromixer
- **Microreactor Wetted materials:** Glass or Quartz
- **Outer materials:** Aluminium, stainless steel and polyurethane sprayed white with highly chemically resistant epoxy paint. PTFE, glass and anodized aluminium door
- **Active parts anodized red**
- **Dimensions:** H 135mm x W 160mm x D 305mm
- **Display:** 50mm x 16mm LED display with status indicator LEDs
- **Voltage input:** 100V to 240V AC, 50/60Hz

\*Note that at ambient temperatures greater than 20°C, the lowest achievable microreactor chip temperature may be higher than -15°C.

### Asia Pressure Controller

2200532

The Asia Pressure Controller is designed to easily set the back pressure of the system from 1 bar to 20 bar. By pressurizing the fluidic system, the Asia Pressure Controller enables reactors to be heated up to 150°C over the atmospheric boiling point of solvents and therefore enable rates of reaction that are 1000s of times faster.

The Asia Pressure Controller can be manually controlled from its front panel or automated from an Asia Pump or a PC by using the Asia Automator. This module also includes a detachable back pressure regulator and gas pressure extension pipe. This enables the use of the back pressure regulator with the Product Collector or Automated Product Collector.

#### Specification:

- **Supply gas pressure requirement:** 2 to 25 bar
- **Input pressure fitting:** 1/8 female BSP on module. 1/8 male to BSP 4mm high pressure polymer tubing fitting supplied, plus tubing.
- **Set output pressure:** 1 to 20 bar (achievable pressure can only be ≤ input pressure)
- **Pressure sensor:** Displayed to 0.1 bar
- **Wetted materials:** Glass and PFA
- **Outer materials:** Aluminium, stainless steel and polyurethane sprayed white with highly chemically resistant epoxy paint
- **Active parts anodized red**
- **Dimensions:** H 135mm x W 160mm x D 260mm
- **Display:** 50mm x 16mm LED display with status indicator LEDs
- **Voltage input:** 100V to 240V AC, 50/60Hz



**Asia Heater****2200527**

3 Asia Heater modules showing all different available add-on adaptors to the heater



Asia Heater (Shown with Solid Phase Adaptor and solid phase reactors)



Asia Heater (Shown with Microreactor Adaptor)



Asia Heater (Shown with Tube Reactor Adaptor and tube reactor)

The Asia Heater provides heating for all types of Asia flow reactors. With its range of adaptors that are interchangeable in seconds, it can quickly and accurately heat glass microreactors, tube reactors or solid phase reactors.

Microreactors can be heated up to 250°C using the Microreactor Adaptor. Fluoropolymer tube reactors can be heated to 125°C or stainless steel tube reactors heated to 250°C using the Tube Reactor Adaptor. Heterogeneous catalysts, scavengers or solid supported reagents can be heated in regular solid phase column reactors to 80°C or in high temperature column reactors to 150°C by using the Solid Phase Reactor Adaptor.

Reactions at these high temperatures can be achieved with the assistance of the Pressure Controller which can increase the boiling point of the solvent by increasing the reaction pressure. These high temperatures can improve reaction rates by over 1000 times versus the rate at the atmospheric pressure reflux temperature.

The Asia Heater can be manually controlled from its front panel or automated from an Asia Pump or a PC using the Asia Automator.

**Specification:**

- **Reactor temperature:** +40°C up to +250°C (dependant upon reactor/adaptor type).
- **Temperature set to 1°C and displayed to 0.1°C.**
- **Accuracy:** +/- (0.3°C + 0.005T) where T is temperature in °C
- **Outer materials:** Aluminium, stainless steel and polyurethane sprayed white with highly chemically resistant epoxy paint
- **Active parts anodized red**
- **Dimensions:** H 260mm x W 160mm x D 265mm
- **Display:** 50mm x 16mm LED display with status indicator LEDs
- **Voltage input:** 100V to 240V AC, 50/60Hz

**Asia Heater Solid Phase Adaptor (230V)****2200528****Asia Heater Solid Phase Adaptor (120V)****2200622****Asia Heater Microreactor Adaptor (230V)****2200529****Asia Heater Microreactor Adaptor (120V)****2200623****Asia Heater Tube Reactor Adaptor (230V)****2200530****Asia Heater Tube Reactor Adaptor (120V)****2200624**

### Asia FLLEX

The Asia FLLEX (Flow Liquid Liquid EXtraction) module is the flow chemistry equivalent of a separation funnel. Operating continuously, these aqueous work-up or extraction modules initially mix the organic product stream with an aqueous phase, then after rapid diffusion, split the flow back to its constituent parts.

By using advanced membrane technology rather than gravity, the FLLEX module can separate two phase mixtures that would be extremely difficult by typical techniques e.g. THF and an aqueous phase.

The Asia FLLEX can be manually controlled from its front panel or automated from a PC using the Asia Manager PC Software. The Asia FLLEX module requires the Asia Pressure Controller.

### Asia Micro FLLEX

2200531

#### Specification:

- **Maximum organic/aqueous rate:** 250 to 500µl/min
- **Wetted materials:** Glass, PTFE, PFA and PEEK
- **Internal volume:** 100µl
- **Cross membrane pressure range:** 0 to 500 mbar
- **BPR pressure range:** 1 to 9 bar
- **Input gas pressure (from Asia Pressure Controller):** 4 to 10 bar

**Asia Sampler and Dilutor (with HPLC valve)****2200533**

The Asia Sampler and Dilutor enables on-line reaction analysis by offering automated sample extraction, dilution and transfer to virtually any LCMS, GCMS, UPLC, etc.

Without stopping the experiment, the Sampler and Dilutor automatically takes a 5µl sample (or multiple samples) from the flowing stream of each experiment, dilutes it (by a factor from 5 to 250) and automatically injects it into the analytical apparatus. The Sampler and Dilutor sends a “start” signal to the chromatographic device to start the run. It can also accept a “busy” state signal from the device to avoid injecting a sample before it is ready.

**Specification:**

- **Dilution factor:** 5 to 250
- **Reaction operating pressure:** 0 to 20 bar
- **High pressure (chromatography) operating pressure:** valve dependent
- **Wetted materials pre dilution (i.e. in contact with reaction solution):** Glass, PTFE and PCTFE
- **Wetted materials post dilution:** PTFE and 316 stainless steel
- **Reaction operating pressure:** 0 to 20 bar
- **Outer materials:** Aluminium, stainless steel and polyurethane sprayed white with highly chemically resistant epoxy paint
- **Active parts anodized red**
- **Dimensions:** H 260mm x W 160mm x D 265mm
- **Display:** 50mm x 16mm LED display with status indicator LEDs
- **Voltage input:** 100V to 240V AC, 50/60Hz

**Asia Product Collector****2200534**

The Asia Product Collector allows convenient collection of samples into a range of vessel sizes. The automated 3-way valve allows the solvent between samples (and/or reaction samples not at steady state) to be diverted to waste and the reaction to be collected.

When controlled from the Asia Syringe Pump or from a PC (via the Automator), the valve automatically switches from waste to collection allowing total walk-away synthesis of one reaction and minimum collection volume. In standalone mode, the valve can also be toggled (between waste and collection) manually using the button on the top of the module. The Asia Collector can accommodate three different vial sizes in its manually rotated carousel. The valve assembly can also be removed and held remotely for collection of large volumes when scaling up.

**Specification:**

- **Operating pressure:** 0 to 20 bar
- **Wetted materials:** Glass, PTFE, PCTFE and PFA
- **Outer materials:** Aluminium, stainless steel and polyurethane sprayed white with highly chemically resistant epoxy paint.
- **Active parts anodized red**
- **Dimensions:** H 400mm x W 160mm x D 265mm
- **Display:** 26mm x 88mm LED display
- **Voltage input:** 100V to 240V AC



Asia Automated Collector (Premium)

### Asia Automated Collector Range

The range of Asia Automated Collectors (Mini, Regular and Premium) enable fully automated collection of multiple reactions. The Asia Automated Collectors allow the solvent between samples (and/or reaction samples not at steady state) to be diverted to waste and the reaction to be collected.

The 3-way valve automatically switches from waste to collection as the product arrives at the Automated Collector allowing total walk-away synthesis of multiple reactions and minimum collection volumes.

The Asia Automated Collectors can be controlled by the Asia Automator and either the Asia Syringe Pump (up to 99 experiments) or the Asia Manager PC software (up to hundreds of experiments).

This module requires the Pressure Controller.

#### Specification:

- **Wetted materials:** Glass, PTFE, PCTFE and PFA

### Asia Automated Collector (Mini)

**2200535**

#### Specification:

- **Dimensions:** W 324mm x D 292mm x H 267mm
- **Maximum number of collections:** 128 (12 x 75mm) tubes with optional Rack Code 14
- **Maximum collection volume:** 20ml (28 x 60mm scintillation vials with optional Rack Code 24)

### Asia Automated Collector (Regular)

**2200561**

#### Specification:

- **Dimensions:** W 479mm x D 464mm x H 330mm
- **Maximum number of collections:** 240 (12 x 75mm) 5ml tubes with Rack Code 29
- **Maximum collection volume:** 32ml (18 x 180mm tubes or 25mL (18 x 150mm))

### Asia Automated Collector (Premium)

**2200562**

#### Specification:

- **Dimensions:** W 503mm x D 391mm x H 348mm
- **Maximum number of collections:** 432 (10 x 75mm) 4ml tubes with four Rack Code 341
- **Maximum collection volume:** 1 litre (8 x 1 litre bottles) with one Rack Code 92

**Asia Automator****2200536**

The Asia Automator enables automated flow chemistry experiments, controlled either by the Asia Syringe Pump (e.g. 210, 220 or 310 systems) or the Asia Manager PC Software (e.g. 230, 320 or 330 systems).

**Controlling a system from the Asia Syringe Pump:**

The Asia Automator connects to an Asia Syringe Pump (2200292), via its USB port. The Asia Automator also connects to an Asia Product Collector (2200534) or Asia Automated Collector (2200562) and up to 4 other modules. Parameters such as pressure, temperature, molar ration, residence time and collection volumes are set up for each experiment on the Asia Syringe Pump which will then run the experiments automatically.

**Controlling a system from a PC:**

By connecting the Asia Automator and the Asia pump to a PC via USB, it is possible to control the Asia system using Asia Manager PC software (2200537). This allows to easily set-up any fluidic system, design a list of experiments and run them successively while monitoring data in real-time.

**Connections:**

1 x USB B Port for Asia Syringe Pump or PC

4 x Module Ports for modules such as:

- Asia Reagent Injector
- Asia Chip Climate Controller
- Asia Heater
- Asia Pressure Controller

1 x Collector Port for the Asia Product Collector or Asia Automated Collector

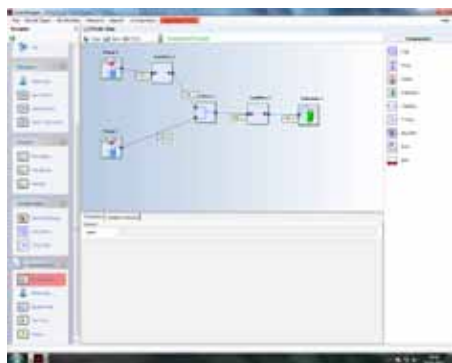
**Minimum modules required for use with automated systems controlled from the Asia Syringe Pump:**

1 x Asia Automator  
 1 x Asia Syringe Pump  
 1 x Asia Chip Climate Controller, Asia Heater, Asia Pressure Controller, Asia Product Collector or Asia Automated Collector

**Maximum modules possible when using system control from Asia Syringe Pump:**

1 x Asia Automator  
 1 x Asia Syringe Pump  
 1 x Asia Reagent Injector  
 1 x Asia Chip Climate Controller or Asia Heater  
 1 x Asia Pressure Controller  
 1 x Asia Product Collector or Asia Automated Collector





### Asia Manager PC Software

2200537

Asia Manager Software is easy-to-use and intuitive PC software for total “walk-away” control of the Asia System. The software allows “chemist familiar” terms to be entered, e.g. residence time, temperature, reaction scale, reagent concentrations and equivalents to be used.

The software then calculates all the flow rates, timings etc. even for sophisticated multi step reactions. This enables full and easy automation of the entire process including temperature control, pump rates, sample injections and product collection.

All modules connected to the PC are automatically detected and their status tracked. It is possible to open a previous experiment, select from a list of preconfigured fluidic layouts or create your own. A list of experiments, can be created in seconds and when running the experiments, data such as temperatures, pressures and flow rates can be plotted and is automatically logged. The Asia Manager PC Software is the most sophisticated and powerful software available for flow chemistry.

**Requirements:** The Asia Manager PC Software requires the Asia Automator to connect to modules other than the Asia Syringe Pump or Asia Sampler and Dilutor.

### PC with Monitor and Mouse

2200564

This computer is defined for use with Asia Systems. When purchased with the Asia Master PC Software, the software will be preinstalled on the computer.

- CPU: Minimum 1.8GHz + Intel Pentium Dual Core processor
- Memory: Minimum 2GB
- Operating System: Windows 7 Professional (32 bit)
- Hard Disk: 320GB
- Display Resolution Minimum: Super VGA 1024 x 768
- USB Ports: Minimum 4

### Chemistry Application Support

Syrris also offers one-on-one practical assistance to learn more about flow chemistry and the application of your existing reactions to flow chemistry. If you would like to have one of our experienced chemists visit your laboratory to assist you with your flow chemistry and help you get the most out of your Asia system, please contact Syrris. This is charged at a daily rate plus travel expenses.

Also, for those new to Flow Chemistry or Asia, Syrris offers free flow chemistry workshops for customers and potential customers. Please contact Syrris for more information.



**СинЭкс - эксклюзивный представитель Syrris в РФ**  
[www.sineks.ru](http://www.sineks.ru) // +7 (495) 223-18-03

# flow reactors

Asia offers a wide range of reactors in glass, metal and fluoropolymer.

Liquid phase reactor volumes: 6.25 $\mu$ l, 62.5 $\mu$ l, 250 $\mu$ l, 1ml, 4ml, 16ml

Solid phase reactor volumes: 0.7ml, 2.4ml, 5.6ml, 12ml





### Asia Microreactors

The Asia Microreactors are chemically resistant, transparent, robust flow reactors for solution phase chemistry and offer a wide temperature and pressure range. The design results in extremely fast and reproducible mixing, rapid heat transfer and minimized back pressure due to flow.

The microreactor chip is supplied in a holder which enables a number of benefits such as quick connection of fluid pipes via the Chip Header (2100147), physical durability, and thermal insulation. The holder also allows the microreactor to be heated or cooled by clipping it into the Asia Chip Climate Controller or Asia Heater.

Three different reactor volumes (62.5µl, 250µl and 1000µl) are available giving a range of reaction times (the residence time of the chemicals within the reactor changes with volume assuming the flow rate remains constant). Each volume comes in either a 2 input or 3 input version. Chip blanking plugs (2100210) can be placed into the Chip Header to reduce number of inputs used. Note that the output of one microreactor can be connected to the input of a second reactor to perform sequential reactions.

#### Specification:

- **Wetted materials:** Glass or quartz
- **Temperature range:** -20°C to +250°C
- **Maximum pressure:** 30 bar (10 bar for 1000µl Microreactor Chips)

<b>Asia 62.5µl Microreactor Chip 2 Input</b>	<b>2100141</b>
----------------------------------------------	----------------

<b>Asia 250µl Microreactor Chip 2 Input</b>	<b>2100143</b>
---------------------------------------------	----------------

<b>Asia 1000µl Microreactor Chip 2 Input</b>	<b>2100145</b>
----------------------------------------------	----------------

<b>Asia 62.5µl Microreactor Chip 3 Input</b>	<b>2100142</b>
----------------------------------------------	----------------

<b>Asia 250µl Microreactor Chip 3 Input</b>	<b>2100144</b>
---------------------------------------------	----------------

<b>Asia 1000µl Microreactor Chip 3 Input</b>	<b>2100146</b>
----------------------------------------------	----------------

**Asia Quartz Microreactors**

The microreactor chips are also available in quartz to accommodate specific chemical reactions (photochemistry for example). They present the same characteristics as the glass microreactors and are available in 62.5µl, 250µl and 1000µl reaction volumes.

The Quartz Microreactor is supplied in a holder which enables a number of benefits such as quick connection of fluid pipes via the Chip Header (2100147), physical durability, and thermal insulation. The holder also allows the microreactor to be heated or cooled by clipping it into the Asia Chip Climate Controller (2200526) or Asia Heater (2200527).

**Asia 62.5µl Quartz Microreactor Chip 2 Input**

**RD2200457**

**Asia 250µl Quartz Microreactor Chip 2 Input**

**RD2200459**

**Asia 62.5µl Quartz Microreactor Chip 3 Input**

**RD2200458**

**Asia 250µl Quartz Microreactor Chip 3 Input**

**RD2200460**

**Asia Micromixer Chip**

**2101411**

The glass Micromixer improves on the mixing in standard microreactor chips. The mixing time within this chip has been reduced to less than 3 milliseconds by optimizing the mixing geometry. Similar to other microreactors the chip is supplied in a holder which enables quick connection of fluid pipes via the Chip Header (2100147).

The micro mixer can then be heated or cooled by clipping it into the Asia Chip Climate Controller or Asia Heater. Very fast mixing times can be achieved and may be required for nanoparticle synthesis, selectivity, crystallization, reaction kinetics (for studies of fast reactions) and rapid dilution (for analytical chemistry).

**Specification:**

- **Wetted materials:** Glass
- **Reaction volume:** 6.25µl
- **Temperature range:** -20°C to +250°C
- **Maximum pressure:** 30 bar

Asia Micromixer Chip shown in chip casing

### Asia Tube Reactors

The Asia Tube Reactors are large volume microfluidic reactors designed for preparative scale solution phase chemistry. The tube reactor contains a long length tube giving higher volumes than the glass microreactors and therefore allows higher flow rates for a given residence time.

The increase in flow rate enables reaction scales of up to a kilo overnight. The tube reactors are available in 4ml or 16ml, in a selection of materials including fluoropolymer and stainless steel for a wide range of temperatures. The fluoropolymer tube reactors have a glass insulated protective cover allowing total visualization of the reaction.

#### Specification:

- **Wetted materials:** Fluoropolymer or 316 stainless steel
- **Maximum temperature:** 125°C (fluoropolymer) or 250°C (stainless steel)
- **Operating pressure:** 0 - 10 bar (fluoropolymer) or 0 - 30 bar (stainless steel)

**Asia 4ml Tube Reactor Fluoropolymer**

**2200541**

**Asia 16ml Tube Reactor Fluoropolymer**

**2200542**

**Asia 4ml Tube Reactor Stainless Steel**

**2200543**

**Asia 16ml Tube Reactor Stainless Steel**

**2200544**

### Asia Standard Solid Phase Reactors

Solid Phase Reactors are used within an Asia system to allow the use of solid phase chemistry such as catalysts, solid-supported reagents or scavengers. The columns can be heated by mounting on the Asia Heater using the Solid Phase Reactor Adaptor.

There are 4 different diameter solid phase reactors, each 100mm long, offering a wide range of volumes. Optional adjustable ends allow more control over the quantity of packed solid phase reagents.

#### Specification:

- **Wetted materials:** Glass, PTFE and FFKM
- **Volumes:**
  - **Size 1:** 0.7ml
  - **Size 2:** 2.4ml
  - **Size 3:** 5.6ml
  - **Size 4:** 12ml
- **Maximum Temperature:** 80°C

**Standard Solid Phase Reactor Size 1 (3mm ID)**

**2101341**





Standard Solid Phase Reactor Size 2 (6.6mm ID)	2101342
------------------------------------------------	---------

Standard Solid Phase Reactor Size 3 (10mm ID)	2101343
-----------------------------------------------	---------

Standard Solid Phase Reactor Size 4 (15mm ID)	2101344
-----------------------------------------------	---------

Standard Solid Phase Reactor Pack (1 of each size)	2101345
----------------------------------------------------	---------

Standard Solid Phase Reactor Size 3 with Adjustable End	2200014
---------------------------------------------------------	---------

Standard Solid Phase Reactor Size 4 with Adjustable End	2200015
---------------------------------------------------------	---------

### Asia High Temperature Solid Phase Reactors

High Temperature Solid Phase Reactors are specially modified to withstand higher temperatures. These reactors can be heated up to 150°C using the Asia Heater with the Asia Solid Phase Reactor Adaptor. There are 4 different diameter solid phase reactors, each 100mm long, offering a wide range of volumes.

#### Specification:

- **Wetted materials:** Glass, PTFE and FFKM
- **Volumes:**
  - Size 1: 0.7ml
  - Size 2: 2.4ml
  - Size 3: 5.6ml
  - Size 4: 12ml
- **Maximum Temperature:** 150°C

High Temperature Solid Phase Reactor Pack (1 of each size)	2200553
------------------------------------------------------------	---------

High Temperature Solid Phase Reactor Size 1 (3mm ID)	2200545
------------------------------------------------------	---------

High Temperature Solid Phase Reactor Size 2 (6.6mm ID)	2200546
--------------------------------------------------------	---------

High Temperature Solid Phase Reactor Size 3 (10mm ID)	2200547
-------------------------------------------------------	---------

High Temperature Solid Phase Reactor Size 4 (15mm ID)	2200548
-------------------------------------------------------	---------

High Temp. Solid Phase Reactor Size 3 with Adjustable End	2200549
-----------------------------------------------------------	---------

High Temp. Solid Phase Reactor Size 4 with Adjustable End	2200550
-----------------------------------------------------------	---------





### Adjustable Ends

The Adjustable ends for Asia solid phase column reactors allow the quantity of packed solid phase reagents to be varied in both high temperature and standard solid phase reactors.

<b>Adjustable End for High Temp. Solid Phase Reactor Size 3</b>	<b>2200551</b>
-----------------------------------------------------------------	----------------

<b>Adjustable End for High Temp. Solid Phase Reactor Size 4</b>	<b>2200552</b>
-----------------------------------------------------------------	----------------

<b>Adjustable End for Standard Solid Phase Reactor Size 3</b>	<b>2200016</b>
---------------------------------------------------------------	----------------

<b>Adjustable End for Standard Solid Phase Reactor Size 4</b>	<b>2200017</b>
---------------------------------------------------------------	----------------

# accessories

**Syrris offer a wide range of accessories and consumables for Asia including user serviceable parts, starter kits and day to day consumables.**





## Asia Tubing Kits

Asia tubing kits include all the tubing needed to connect all the modules supplied with each of the standard Asia systems.

Asia 110 Tubing Kit	2200538
Asia 120 Tubing Kit	2200539
Asia 130 Tubing Kit	2200540
Asia 210 Tubing Kit	2200555
Asia 220 Tubing Kit	2200556
Asia 230 Tubing Kit	2200557
Asia 310 Tubing Kit	2200558
Asia 320 Tubing Kit	2200559
Asia 330 Tubing Kit	2200560



## Flow Tubing Starter Kit

2110713

The Flow Tubing Starter Kit contains a range of different consumables required to get users started with flow chemistry. This kit includes PTFE tubing, end fittings, scalpels and syringes.



## Syringes for Asia Syringe Pump

The Asia Syringe Pump syringes come in 4 different sized colour coded pairs: yellow, green, blue and red, with each coloured pair allowing a different flow rate range. Each colour coded pair of syringes has one syringe twice the volume of the other (e.g. a pair of yellow syringes has 1 x 50µl syringe and 1 x 100µl syringe) and this pair fits on one of the two pumps on an Asia Pump module. Therefore, for example, to fit both continuous pumps of an Asia Syringe Pump module with yellow syringes (capable of 1µl/min to 250µl/min), please order 2 x 2200391.

Note that each of the two pumps on an Asia Syringe Pump module can accept different colour pairs e.g. the left hand pump can have a pair of green syringes (1 x 2200392) and the right hand pump can have a pair of red syringes (1 x 2200394) fitted.

<b>Asia Yellow Syringes (50µl/100µl) 1µl to 250µl/min</b>	<b>2200391</b>
-----------------------------------------------------------	----------------

<b>Asia Green Syringes (250µl/500µl) 5µl to 1.25ml/min</b>	<b>2200392</b>
------------------------------------------------------------	----------------

<b>Asia Blue Syringes (500µl/1ml) 10µl to 2.5ml/min</b>	<b>2200393</b>
---------------------------------------------------------	----------------

<b>Asia Red Syringes (2.5ml/5.0ml) 50µl to 10ml/min</b>	<b>2200394</b>
---------------------------------------------------------	----------------



<b>Asia Pump Pressure Sensor</b>	<b>2200431</b>
----------------------------------	----------------

The Asia Pump Pressure Sensor connects in seconds (without the need for tools) to the front of the Asia Pump Valve, which in turn connects to the front of the Asia Pump. It is extremely chemically resistant and permanently monitors the pressure of the fluid in its corresponding pump channel. The pressure is displayed on the Asia Pump screen in real time and continuously logged. The pump will automatically stop if it exceeds a user settable maximum pressure.



<b>Asia Pump Valve</b>	<b>2200432</b>
------------------------	----------------

The Asia Pump Valve clips on and off the front of the Asia Pump without the need for tools, thus allowing quick and easy replacement. The valve housing accepts a pair of Asia colour coded syringes on the underside and an Asia Pump Pressure Sensor on the front. Wetted materials: PTFE and PCTFE.





### Sample Loops

The Sample Loops fit in the Reagent Injector module (2200520) and allow reagents (or solvents) to be added in-line, rather than being pumped through the pumps. In this mode, solvents pumped from the Asia Pumps push the reagents out of the Sample Loops and into the reactor. Sample Loops are available in 0.1ml, 1ml, 5ml or 10ml. All the wetted parts are PTFE.

**0.1ml Sample Loop for Asia Reagent Injector**

**2200519**

**1ml Sample Loop for Asia Reagent Injector**

**2200521**

**5ml Sample Loop for Asia Reagent Injector**

**2200522**

**10ml Sample Loop for Asia Reagent Injector**

**2200523**

**Asia Reagent Injector without Sample Loops**

**2200563**



### Chip Header

**2100147**

The Chip Header enables alignment and connection of all the input and output pipes to the microreactor chip in seconds. The header is secured to the microreactor chip by the two knurled thumb screws. FFKM O rings are used to seal between the input/output pipes and the glass surface resulting in a chemically resistant, reliable, “zero” dead volume seal rated to 20 bar (300psi).



### Chip Header FFKM Seals (Pack of 10)

**2110721**

The chip header seals help make the connection between the Microreactors or chips (2100141 - 2100146) and the input/output pipes held in the Chip Header (2100147). Made of extremely chemically resistant fluoro elastomer (FFKM) they create a “zero” dead volume seal rated to 20 bar (300psi).



### Chip Header Blanking Plug

**2100210**

Inputs to microreactor chips can be sealed off using the Chip Header Blanking Plug. This enables a 3 input microreactor chip to also be used with 1 or 2 inputs and a 2 input microreactor chip to be used with just 1 input. The blanking plug inserts into the Chip Header (2100147) in place of an input pipe and should be used with a Chip Header Seal (2110721).



## Plugs for 1/4" - 28 Ports (Pack of 6)

2110672

These plugs can be used to seal off a 1/4"-28 port (the most common type of fitting in Syrris flow systems). The most common use is to seal off inputs in a Tube Reactor thereby enabling Tube Reactors to be used with just 1 or 2 inputs.



## Back Pressure Regulator (BPR)

2110706

The back pressure regulator (BPR) is a replacement for the BPR attached to the Asia Pressure Controller (2200532). This not only allows reactions to be superheated to 110°C to 140°C above their normal boiling point but also avoids outgassing.



## BPR Chip

2100737

A replacement glass chip for use with the Back Pressure Regulators contained within the Asia Micro FLLEX Module (2200531) and Asia Pressure Controller (2200532).



## BPR Diaphragm Set (2 Sets) - PEEK BPR

2100896

The BPR diaphragms are located in the BPRs (Back Pressure Regulators) in the Asia Pressure Controller (2200532) and Micro FLLEX Module (2200531). Made of chemically resistant fluoropolymers, they regulate the pressure of the system. Each set contains two pairs of diaphragms.



## Micro FLLEX Chips

Replacement glass and PEEK chips for the separator in Micro FLLEX. The PEEK chip is more physically robust whereas the glass chips offer higher chemical resistance. Note that the base chip must always be glass.



## Micro FLLEX Base Chip

2100730

## Micro FLLEX Top Chip (Glass)

2100719

## Micro FLLEX Top Chip (PEEK)

2101588

## Accessories



### Micro FLLEX 25mm PTFE Membrane (Pack of 10)

2101508

A pack of 10 replacement PTFE hydrophobic membranes for use within the Micro FLLEX Module (2200531).



### Micro FLLEX Tubing

Tubing that enters the Micro FLLEX separator uses specialist FFKM connectors. The pipes listed here are direct replacement for the ones supplied with the system.

### Micro FLLEX Contactor Pipe

2100777

### Micro FLLEX Contactor to Separator Pipe

2100754

### Micro FLLEX Separator to BPR Pipe

2100755



### Vici PEEK finger tight valve fittings (pack of 10)

2200610

For use with the Reagent Injector and complete with CTFE ferrules.



### Orange End Fittings for 1.6 mm OD Pipe (Pack of 10)

2200618

A pack of 10 pairs flangeless ferrules and ¼-28 orange compact fittings for 1.6 mm OD pipe.

### Orange End Fittings for 3.2 mm OD Pipe (Pack of 10)

2200619

A pack of 10 pairs flangeless ferrules and ¼-28 orange compact fittings for 3.2 mm OD pipe.



**PTFE Pipe 1.6mm OD x 0.5mm ID x 10m**

**2200301**

**PTFE Pipe 1.6mm OD x 0.8mm ID x 10m**

**2200302**

**PTFE Pipe 3.2mm OD x 1.5mm ID x 10m**

**2200303**



**Large Compact Fitting for 1.6mm OD Pipe (Pack of 2)**

**2200105**

The Long Compact Fitting for 1.6mm OD Pipe is used with the PTFE Pipe Gripper for 1.6mm OD pipe to make tubing connections. It is used on the BPRs (Back Pressure Regulators) along with the shorter Compact Head Fitting for 1.6mm OD Pipe (2200103) and by protruding further allows easier tightening.



**Compact Head Fitting for 1.6mm OD Pipe (Pack of 10)**

**2200103**

The Compact Head Fitting for 1.6mm OD Pipe is used with the PTFE Pipe Gripper for 1.6mm OD pipe to make tubing connections. It is used when space restrictions do not allow the Large Head Fitting for 1.6mm OD Pipe (2200104) to be used. The most common example is on the BPRs (Back Pressure Regulators).



**Large Head Fitting for 1.6mm OD Pipe (Pack of 10)**

**2200104**

The Large Head Fitting for 1.6mm OD Pipe is used with the PTFE Pipe Gripper for 1.6mm OD pipe to make tubing connections. The large head allows a greater finger tightness than the compact head.



**PTFE Pipe Gripper for 1.6mm OD Pipe (Pack of 10)**

**2200102**

The PTFE Pipe Gripper for 1.6mm OD pipe is used for some of pipe connections in Asia systems and is used with either the Compact Head Fitting for 1.6mm OD Pipe (2200103) or Large Head Fitting for 1.6mm OD Pipe (2200104).

# flow chemistry guide

Flow chemistry, sometimes referred to as plug flow, microchemistry or continuous flow chemistry is an exciting and productive technology for R&D chemists. It offers the chemist a new tool to speed discovery and development.

This section provides information about the application of flow chemistry.

## Flow Benefits:

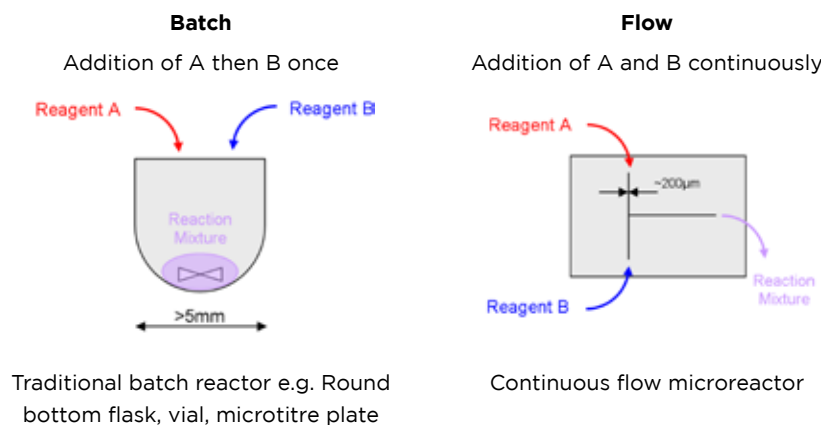
- Scalable volume of reactions
- Faster reactions
- Greater reaction selectivity
- Safer reactions
- Fewer impurities
- Accurate temperature control
- Rapid mixing
- Easy scale-up
- Integration of synthesis analysis and work up



## 1. The Basics of Flow Chemistry

### 1.1 Batch vs Flow Reactions

Flow chemistry (sometimes referred to as plugflow, microchemistry, or continuous flow chemistry) offers research and development chemists exciting benefits over other synthetic techniques. This guide covers some of the basics of flow chemistry.



### 1.2 Flow Rate, Residence Time, Reactor Volume & Production Rate

In a flow reactor, the residence time of the reagents in the reactor chip (i.e. the amount of time that the reaction is heated or cooled) is calculated from the volume of the reactor and the flow rate through it.

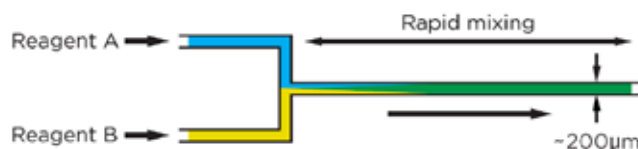
$$\text{Residence time} = \text{Reactor Volume} / \text{Flow Rate}$$

Therefore, to achieve a longer residence time, it is possible to pump more slowly and/or use a reactor with a larger volume. In this way, Asia systems are able to operate with reaction times from a few seconds to a few hours.

For the same given residence time one can either choose to use a larger reactor (and therefore larger flow rate) or a smaller reactor (and therefore smaller flow rate). The key difference is that with a large reactor, more material will be synthesized in a given time. In practice, this means Asia systems can be used to synthesize mg to kg quantities in 24 hours (depending on reaction time and concentration).

### 1.3 Diffusional Mixing in Microreactors

In Asia microreactors, reagents do not mix by turbulence (as in a round bottom flask or jacketed reactor); instead, the reagents mix by diffusion. Because the distance across the chip reactor channel is approximately 200µm, the time taken for reagents to completely diffuse is in the order of seconds. At typical Asia system flow rates, this corresponds to less than 10mm of flow along reaction channel. Note that the total length of the chip reactors is approximately 1m.



### 1.4 Pressure

#### 1.4.1 Back Pressure due to flow

When a liquid (the reaction) flows through a "tube" (the reactor) there is an inherent resistance to its flow. This resistance or backpressure is dependent upon a number of physical factors. Thus, smaller reactor cross section, longer reactor length, higher flow rates and more viscous liquids all generate higher backpressure. The microreactor chips used by the Asia system are specifically designed to generate low backpressure.

### 1.4.2 Pressurizing & Superheating Reactions

When using the Pressure Controller, the Asia system can be easily pressurized up to 20 bar. This allows reactions to be performed at temperatures much higher than atmospheric reflux, enabling faster and often cleaner, higher yielding reactions. Typically, solvents can be heated 60 to 150°C above their boiling point. Using the Arrhenius rate law (doubling of rate for each 10°C rise in reaction temperature), reaction rate increases of the order of 1000-fold are possible.

Examples of the superheating affect that can be achieved include:

DCM @ 158°C (vs 40°C at atmos. press.)

THF @ 193°C (vs 66°C at atmos. press.)

Dioxane @ 240°C (vs 100°C at atmos. press.)

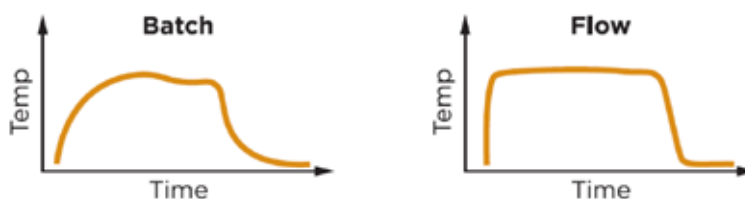
A full table showing atmospheric boiling points and estimated maximum achievable temperatures at 20 bar is included at the end of this catalogue.

### 1.4.3 Pressurizing with Gas Evolution

Applying pressure to an Asia flow reactor also suppresses the evolution of gas. (This is beneficial because if gas bubbles are formed they can propel the reaction mixture out of the reactor leading to uncertain residence times).

### 1.5 Temperature Control

The surface area to volume ratio of the reaction mixture in an Asia reactor is 1000s of times greater than a round bottom flask. Thus heat can be transferred to or from the reaction mixture much more rapidly than in a batch reactor. Greater temperature control can therefore be maintained for exo or endothermic reactions improving consistency and yield.



## 2. Planning Successful Reactions

### 2.1 Planning Chemistry

Performing reactions in flow is analogous to batch chemistry; there are however some differences. A number of flow-specific features are worth taking into consideration when planning flow reactions and these are outlined below.

### 2.2 Solubility

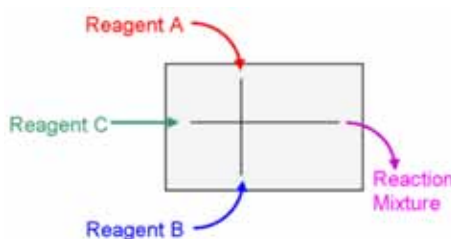
All substrates/reagents need to be in solution before they enter the reactor. The only exception to this is if solid phase reagents are used in a "column" and flowed through. It is recommended that all substrates/reagents for a given reaction are dissolved in the same solvent or mixture of solvents. This avoids the risk of the substrates/reagents precipitating in the reactor.

### 2.3 Reaction Time

Reaction time in the Asia system is generally the same as the batch reaction for a given temperature, however in a flow reactor reaction time can be accelerated by solvent superheating, as noted above.

### 2.4 How Many Inputs (Solutions)?

Asia reactors have either 2 or 3 inputs. This allows up to 3 solutions to be combined simultaneously in a controlled fashion, something that cannot be achieved in batch.

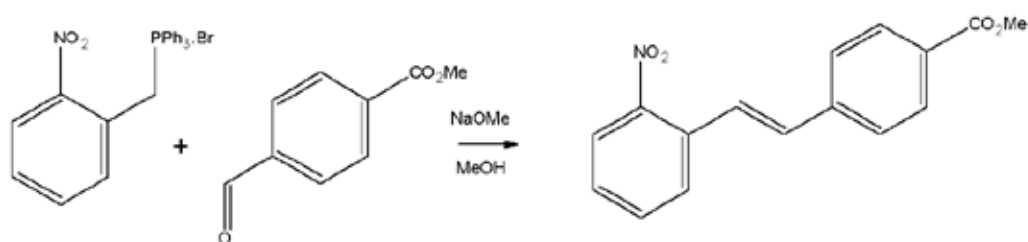


Note that it is possible to block off reactor inputs by inserting a “blocker” into the chip header, rather than an input pipe. This allows, for example, a 3 input reactor to be used for a 2 input reaction. Tube Reactors have 3 input connectors. these inputs can also be blocked as required.

Typically when deciding how many solutions to make up for a reaction, the simplest approach is to have the smallest number of unreacting solutions. However to achieve the greatest flexibility, dividing the substrate/reagents into individual solutions allows the stoichiometry or order of addition of each to be varied.

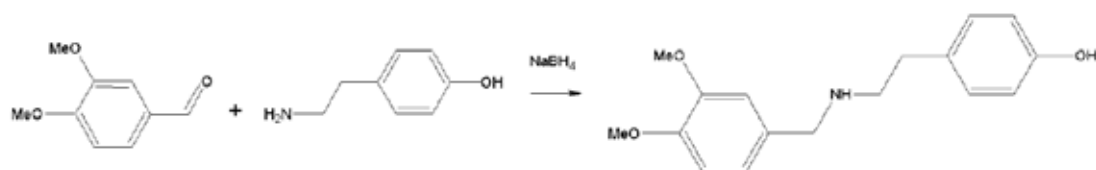
#### Example:

For the following Wittig reaction, the phosphonium salt, aldehyde and methoxide could all be added as individual components in a 3 input chip. Alternatively, because they will not react alone, the phosphonium salt and aldehyde could be combined as one solution and the methoxide be the other.

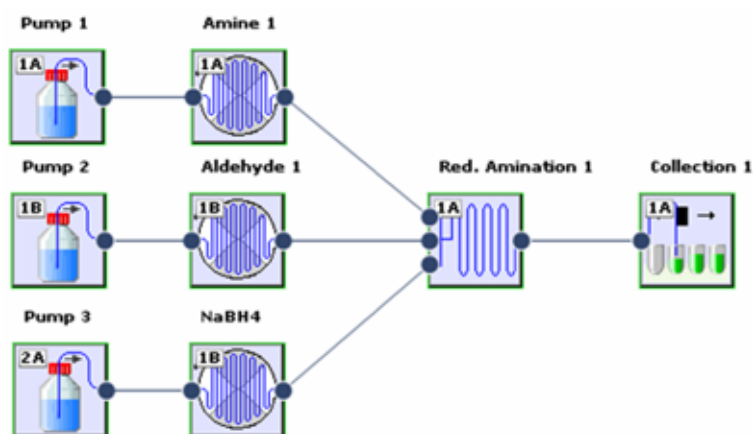


## 2.5 Order of Addition and Multiple Reactors

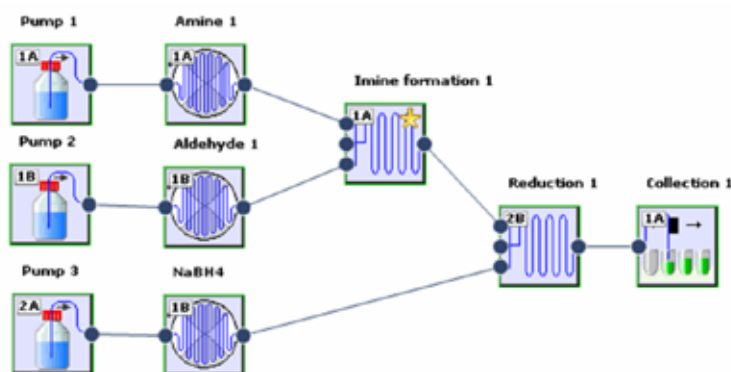
Asia systems allow excellent control over the timing of reagent addition. For example, in the reductive alkylation/amination below, the aldehyde, amine and borohydride could all be added simultaneously in one reactor. However, to avoid over alkylation, the imine could be formed in one reactor and flowed into a second reactor with the borohydride.



### Option 1: Simultaneous reagent combination



## Option 2: Preform imine



The Asia flow system allows many reactors to be combined in one continuous system. This allows extremely complex configurations of multi-step reactions to be controlled.

### 2.6 Substrate/Reagent Solution Concentrations

The Asia Manager PC Software will calculate the relative flow rates required for each solution to generate the entered stoichiometry. The user simply enters the concentration of each solution and the required stoichiometry. As a result, the exact concentration of each solution does not need to be a certain value, its value just needs to be known.

However, where possible, the solutions to be introduced to the chip should be made up such that a similar volume of each solution is required for the typical reaction stoichiometry. This avoids dramatically different flow rates for the different solutions and allows the greatest flexibility when varying stoichiometry.

### 2.7 Method of Reagent Addition

It is possible to pump “unlimited” quantities of reagents through the Asia pumps i.e. aspirate directly from a large vessel and pump the reagent through the pump. When using smaller quantities of reagents e.g. 1-10ml, the solutions can be loaded in to the sample loops in the Reagent Injector.

### 2.8 Running Sequential Reactions

Asia allows a number of reactions to be performed in a serial fashion. One reaction directly follows another and because of the “plug flow” environment the first reaction is simply pushed out and cleaned by the second.

### 2.9 Some Examples of Successful Flow Chemistry

- **Homogeneous and heterogeneous catalysis:**  
Suzuki, Heck, Grubbs metathesis
- **Deprotection chemistry:**  
BOC, MOM, Methyl ester
- **Multicomponent reactions:**  
Passerini 3CR, Biginelli 3CR, Ugi 4CR
- **Oxidations and reductions:**  
Borohydride, Borane, Reductive amination, Dess Martin
- **Ring formations:**  
Benzimidazole, Diels Alder, 1,3,4 Oxadiazole, Fischer indole, 1,3 Thioamidozole, 1,2,3 Triazole
- **General syntheses:**  
Aldol, Biphasic Schotten-Baumann, Amide couplings, Elimination, Esterification, Wittig, SNAr, SN1, Mitsunobu Flow

Solvent	Boiling point at atmospheric pressure (°C)	Suggested max temp* @ 20 bar (°C)
Acetic Acid, Glacial	118	263
Acetone	56	179
Acetonitrile	82	214
1-Butanol	118	263
2-Butanol	100	238
Chloroform	61	186
Cyclohexane	81	213
Dichlorobenzene	180	345
N,N-Dimethyl Formamide	153	309
Dimethyl Sulfoxide	189	358
1,4-Dioxane	101	240
Ether, Anhydrous	35	151
Ethyl Alcohol	78	209
Ethyl Acetate	77	208
n-Heptane	98	236
n-Hexane	69	197
Isobutyl Alcohol	108	249
Methanol	65	191
Methyl Ethyl Ketone	80	212
Methylene Chloride (DCM)	40	158
Pentane	36	152
2-Propanol	82	214
Pyridine	115	259
Tetrahydrofuran	66	193
Toluene	110	252
Water	100	239
Xylene	143	296

## Notes:

- 1) The estimated max temperature achievable at 20 bar has been calculated using the University of Cambridge website <http://www.ch.cam.ac.uk/magnus/boil.html> J. M. Goodman, P. D. Kirby, and L. O. Haustedt Tetrahedron Lett. 2000, 41, 9879-9882.
- 2) There may be hazards such as degradation associated with superheating some solvents.
- 3) The calculated values above are an extrapolation and have not been empirically verified.
- 4) Solvent purity and the presence of reagents and products will change these figures, which should be seen as a guideline only.
- 5) \*As a safety margin, a 2 bar margin has been included in the above data. i.e. the suggested max values for 20 bar have actually been calculated for 18 bar.
- 6) Syrris provided this information for illustration only. Use the superheating capability carefully.



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

## Local Distributors

### Australia

John Morris Scientific  
Chatswood, NSW  
+61 2 9417 8877  
andrew@johnmorris.com.au  
www.johnmorris.com.au

### Austria

Omnichrom Handels gmbH  
Wien  
+43 1 27 85 701  
www.ymc.de

### Argentina

La Química Quirúrgica S.A.C.I.  
Ciudad Autónoma de Buenos Aires  
+54 (11) 5128 9100  
info@laqq.com.ar  
www.laqq.com.ar

### Belgium

Beun De Ronde Serlabo (BRS)  
Drogenbos  
+32 2 334 22 70  
dewinne@brs.be  
www.brs.be

### Brazil

Superlab Instrumentação Analítica  
São Paulo  
+55 (11) 5562-3210  
vendas@superlab.com.br  
www.superlab.com.br

### China

Universal Analytical & Testing  
Instruments Ltd. Shanghai  
+86 21 54170556  
swhung@universallhkco.com  
www.uatil.com

### Croatia

Ohm Lab d.o.o.  
Zabok  
+385 (0) 49 221 580  
info@ohmlab.hr  
www.ohmlab.hr

### Czech Republic

Neotec, spol. s r.o.  
Praha  
+420 257 289 511  
info@neotec.cz  
www.neotec.cz

### Finland

Miliot Science  
Porvoo  
+358 40 142 4939  
miliot@miliot.com  
www.miliot.com

### France

Serlabo Technologies  
Entraigues sur la Sorgue  
+33 4 9023 7720  
baudet@serlabo.fr  
www.serlabo.fr

### Germany

YMC Europe GmbH  
Dinslaken  
+49 2064 427 0  
www.ymc.de

### Greece

Malva SA  
Kifissia  
+30 210 800 0904  
www.malva.gr

### Hong Kong

Universal Analytical & Testing  
Instruments Ltd. Kowloon  
852-36924581  
sales@universallhkco.com  
www.uatil.com

### Hungary

Edison House  
Dabas  
+36 29 562020  
budai@edisonhouse.hu  
www.edisonhouse.hu

### India

Richmond Scientific  
Bangalore  
+91 80 4091 3910  
praveen@richmondscientific.in  
www.richmondscientific.in

### Indonesia

P.T. Unitama Analitika Perkasa  
Jakarta  
+62 21 4268478-80  
agus@unitamaanalitika.com  
www.unitamaanalitika.com

### Israel

Iner-Tech Ltd  
Rehovot  
+972-72-2122880  
info@iner-tech.com  
www.iner-tech.com

### Italy

Alfatech SpA  
Genoa  
+39 010 4699369  
danilo.friscione@alfatechspa.com  
www.alfatechspa.com

### Japan

Reifycs Analytical Inc.  
Osaka  
06-7502-5502  
nabekura@reifycsant.com  
www.reifycsant.com

### Japan

Asahi Glassplant Inc.  
Kumamoto  
0968- 68 - 2121  
info@agi.co.jp  
www.theglassplant.com

### Korea

UNa Trading  
Seoul  
+82-2-823-9062  
una@unatrading.com  
www.unatrading.com

### Latvia

Armgate SIA  
Rīgas raj.  
+371 67 976 782  
armgate@armgate.lv  
www.armgate.lv

### Lithuania

Armgate, UAB  
Vilnius  
+370 5 278 95 73  
info@armgate.lt  
www.armgate.lt

### Malaysia

Aseptec SDN BHD  
Selangor  
+603 8941 5634  
info@aseptec.com.my  
www.aseptec.com.my

### New Zealand

John Morris Scientific  
Auckland  
+64 366 3999  
k.coleman@jms.co.nz  
www.johnmorris.com.au

### Norway

Nerliens Meszansky AS  
Oslo  
+47 - 22 66 65 00  
rune.hofslokker@nmas.no  
www.nmas.no

### Poland

Altea Management  
Katowice  
+48 32 206 98 01  
alan@altea-management.com.pl  
www.altea-management.com.pl

### Portugal

MTB  
Porto  
+351 22 616 73 70  
teresa.pintodasilva@mtbrandao.com  
www.mtbrandao.com

### Qatar

Gulf Scientific Gateway  
Doha  
+974 4431 4032  
info@gsgqatar.com  
www.gsgqatar.com

### Russia

SINEKS  
Moskva  
+7 (495) 223-18-03  
www.sineks.ru  
www.tirit.org

### Singapore

Aseptec PTE. Ltd  
Singapore  
+65 6303 2425  
info@aseptec-sg.com  
www.aseptec-sg.com

### Spain

MTB  
Madrid  
+34 91 806 22 40  
teresa.pintodasilva@mtbrandao.com  
www.mtb.es

### Switzerland

Stagroma AG  
Reinach  
+41 61 71 78 717  
www.stagroma.com

### Taiwan

Analytik Jena Taiwan Co., Ltd  
Sinhuang City  
+886-2-85227886  
sales@analytik-jena.com.tw  
www.analytik-jena.com.tw

### Thailand

Sithiporn Associates Co., Ltd  
Bangkok  
+66 2433 8331  
uthai@sithiporn.com  
www.sithiporn.com

### Turkey

Boyut Ltd.  
Istanbul  
+90 212 222 31 50  
boyut@boyutltd.com.tr  
www.boyutltd.com.tr

### UK and Ireland

GPE Scientific Limited.  
Leighton Buzzard  
+44 (0)1525 382277  
kevin.doyle@gpelimited.co.uk  
www.gpelimited.co.uk



Asia has received an esteemed R&D 100 Award, a benchmark of excellence. This accolade recognizes Asia as a significant technological innovation.

## Syrris Group Offices



**Syrris Ltd.**  
(Europe and Rest of World)  
27 Jarman Way, Royston, Hertfordshire,  
SG8 5HW, United Kingdom  
**T:** +44 (0)1763 242555  
**E:** info@syrris.com  
**W:** www.syrris.com

**Syrris Inc.**  
(North America)  
29 Albion Place, Charlestown,  
MA 02129  
**T:** 617 848 2997  
**E:** info-usa@syrris.com  
**W:** www.syrris.com

**Syrris Japan, Inc.**  
(Japan)  
SOHO Station 202, 24-8, Yamashita-cho,  
Naka-ku Yokohama, Kanagawa  
**T:** 045 263 8211  
**E:** info@syrris.co.jp  
**W:** www.syrris.co.jp

**Syrris Scientific Equipment Pvt. Ltd.**  
(India)  
420/421 Corporate Avenue, Sonawala Road,  
Goregaon (East), Mumbai, 400063  
**T:** +91 22 2686 4410  
**E:** info@syrris.com  
**W:** www.syrris.com

**Syrris do Brasil Ltda.**  
(Brazil)  
Rua Dr. Bacelar, 231 - cj 47 Vila Clementino,  
04026-000 São Paulo - SP  
**T:** +55 11 5083 4963  
**E:** info@syrris.com  
**W:** www.syrris.com.br