

# Conjure™

## Segmented Flow Reactor System

### Broaden Your Chemistry

- Accelerate your chemistry
- Extreme Reaction Conditions
  - Super-heated Temperatures: -20 to 300 °C
  - High Pressures: 150 Bar
- Microwave type reactions but at high pressure
- Immobilize metal catalyst reactors
  - Palladium
  - Copper

### Green Chemistries

- Explore Green solvents at +200 °C:
  - Methanol
  - Ethanol
  - Propanol

### Automate More Conditions

- Automate reaction preparation and injections
- Automate scale up: milligram to 100s of grams
- Automated online LC/MS Analysis and Prep LC/MS

## Exploit the Benefits of Flow Chemistry with the Conjure

Have you been investigating flow chemistry? But haven't found a commercially viable product offering? With the Conjure Flow Reactor System adopting flow chemistry into your laboratory is a real solution.

It's Accendo's adoption of SEGMENTED flow that makes the difference.

#### Reliability

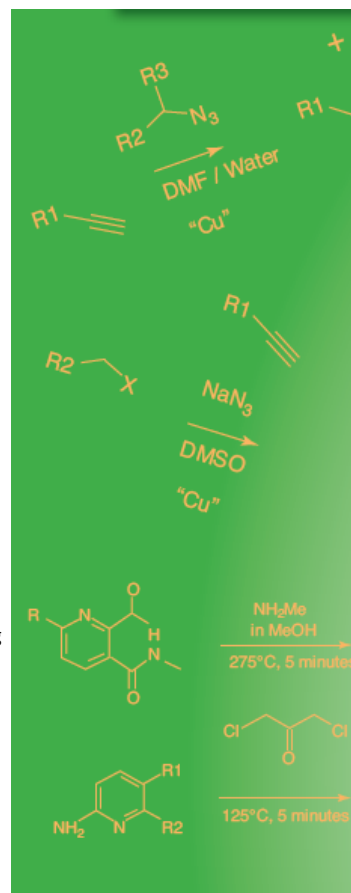
- Conjure is inert to most all aggressive reagents:
  - H<sub>2</sub>SO<sub>4</sub>
  - LiHMDS
  - HCl
  - BuLi
  - Bromine
- Larger flow channels—dramatically reducing clogging

#### Flexibility

- Higher pressures—enabling high temperatures (300 °C)
- Milligram to 10s of grams—minimizing substrate or produce starting materials

#### Productivity—Automation

- Segment scheduling
- Segment preparation and injection
- Collection
- Sampling
- Integrated LC/MS dilution, injection, analysis and reporting
- Integrated Prep LC/MS injection



*"The Pfizer World Wide Chemistry Leadership Team has been a strong supporter of the Conjure flow reactor system for four reasons.*

- *The system expands the chemical space for drug discovery;*
- *Meso-scale is viable for routine medicinal chemistry enabling reaction optimization and scale-up for pre-clinical studies;*
- *It enables continuous, segmented reactions for the rapid production of exploratory compound libraries;*
- *The Conjure system across discovery and process research enables multiple green chemistry parameters driving the economics and rapid*



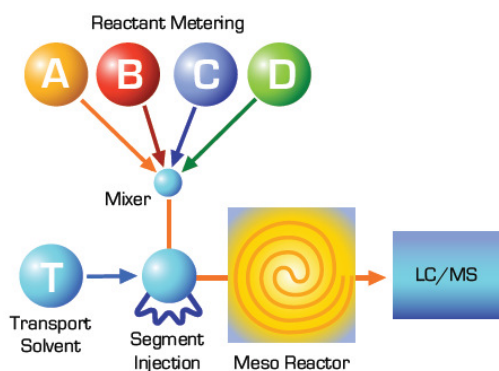
## What is the Conjure?

The Conjure system consists of modular hardware and software that when integrated together creates a sophisticated segmented flow reactor solution for organic chemistry.

By adopting segmented flow technology the Conjure enables the pursuit of chemical reactions not easily pursued with typical traditional laboratory equipment. Conjure has successfully performed reactions routinely run in a microwave, duplicating the extreme temperatures and pressures, but using more cost effective and greener solvents such as ethanol and methanol.

With the Conjure, exploration of reaction conditions for screening and optimization of small volume reaction segments (150  $\mu$ L) enables more experiments with less starting materials.

The Conjure's optional online integration to LC/MS, there's no queuing up for analysis, every experiment is automatically diluted, injected, analyzed and with Conjure's automatic data reporting, each segment's information is instantly made available for review.



## What is Segmented Flow?

Accendo Corporation explored continuous flow chemistry. But continuous flow had limitations. Primarily, high reagent use, low throughput, reliability due to exposure of wetted materials to aggressive chemicals and limited temperature and pressure ranges reduced the breadth of chemistries.

Therefore, Accendo adopted a segmented flow approach where individual experiments are automatically prepared using accurate syringe pump technology and automatically injected into a high pressure, continuous flowing stream of transport solvent using an HPLC injection type valve.

Once in the flow regime, segment continuity is maintained with gas or immiscible solvent spacers while transported through the reactor where incubation rate is controlled by a high pressure pump.

The independent preparation and injection of reaction segments creates a truly viable flow chemistry solution with minimum reagent use, extreme pressures and temperatures, automating reaction preparation and automated, online LC/MS analysis.

## Chemistries and Versatility?

The Conjure Flow Reactor System has proven to perform many types of chemistries, specifically, chemistries that are usually only run in microwave reactors and forbidden chemistries such as those utilizing azides.

- Click Chemistry
- Aryl Substitutions
- Diehls Alder
- Cyclizations
- Sonogashira
- Decarboxylations
- Michael Additions
- Suzuki Reactions

The Conjure contains a two-stage reactor system that enable multi-step reactions, such demonstrated with Click Chemistry where the azide is synthesized in situ in the first stage and then subsequently used in the second step preparation.

Conjure also provides flexibility of scale. The system is routinely used in Medicinal Chemistry for reaction screening, optimization and library production. But also integrated in Process Research for the screening of more cost-effective reaction conditions and scale-up of early pre-clinical quantities.

## Conjure Technical Specifications

Conjure Hardware	
<b>Pump Module</b>	
Transport Solvents	(3) Solvent Reservoirs
Flow Rate	20 to 3,400 $\mu$ L per minute
Incubation Rates	1 to 100 minutes
<b>Segment Preparation Module</b>	
Reagent Diversity	(40) Reagent Reservoirs
Mixing Temperature Range	-20 to 100 $^{\circ}$ C
1st Stage Reactor Temperature	-20 to 100 $^{\circ}$ C
Segment Reagents	Up to four reagents per segment
Two Step Reaction Capability	
<b>Reactor Module</b>	
Temperature Range	-20 to 300 $^{\circ}$ C
Reactor Materials	Palladium Hastelloy Copper Teflon (PFA)
<b>Analytical Interface Module</b>	
Sample Volume	Configurable: 20 to 1,000 $\mu$ L
Dilution Ratio	Neat to 250
LC/MS	Analytical and Preparative
<b>Computer</b>	
Operating System	Windows XP, Windows 7
<b>Conjure Software</b>	
Conjure Design Wizard	Offline experiment designer application
Conjure System Control	System control and segment tracking application
Optional: Design of Experiment	StatEase—DesignExpert

Contact us for an onsite demonstration:

Accendo Corporation  
3762 S Carson Avenue  
Tucson, AZ 85730  
Phone: +1.650.576.3184  
Fax: +1.520.300.7000  
E-mail: [info@accendocorporation.com](mailto:info@accendocorporation.com)

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