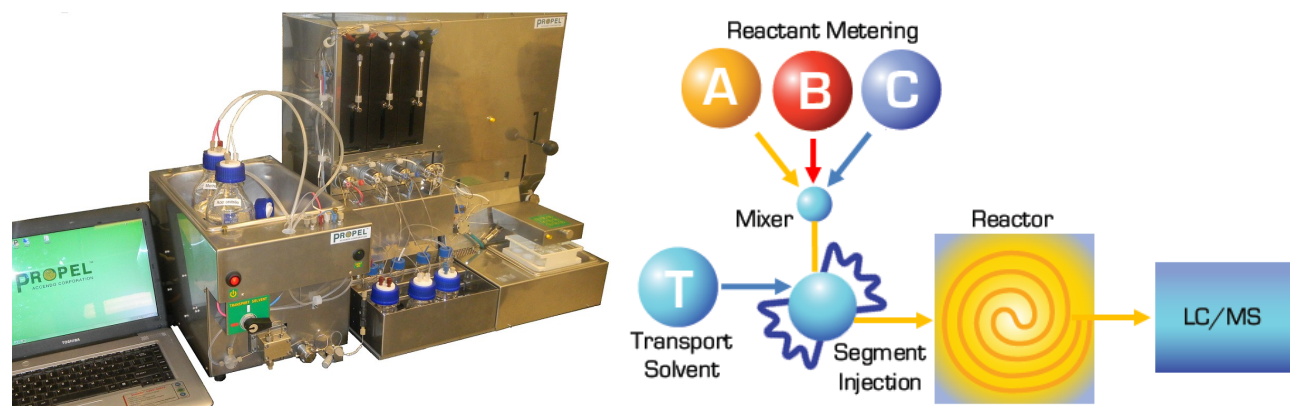


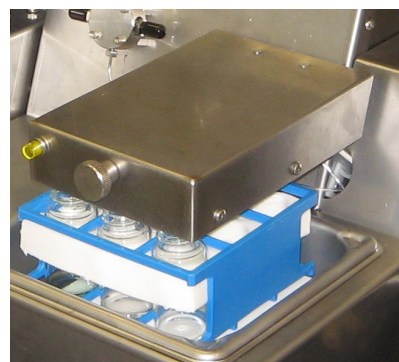
# Propel™ Segmented Flow Reactor System



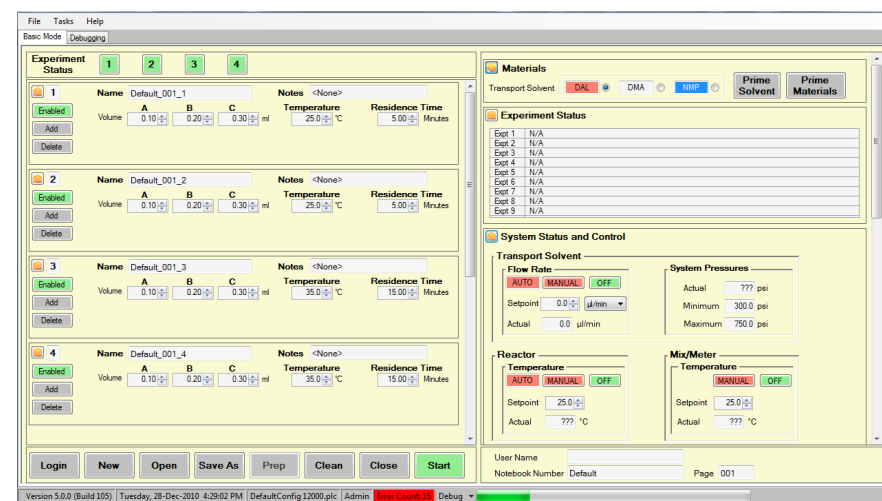
The Propel is a ideal for both medicinal chemistry laboratories and process research as a shared resource for new reaction development and the synthesis of starting materials up to 100 grams.

## Screening, Optimization and Scale Up

- Allows the screening and optimization of up to three materials
- Ambient to 300 °C temperature range
- 150 bar pressures
- Up to nine segments per run
- Inert Reaction Environment
- Minimum screening volume: 100 µL
- Integrated segment collection
- Optional LC/MS Analysis Interface



Sample Collection



Pump Module	
Transport Solvents	(3) Solvent Reservoirs
Flow Rate	20 to 3,400 µL per minute
Incubation Rates	1 to 100 minutes
Chemistry Module	
Reagent Diversity	(3) Reagent Reservoirs
Mixing Temperature Range	-10 to 100 °C
Segment Reagents	Up to three reagents per segment
Incubation Temperature Range	Ambient to 300 °C
Reactor Materials	Palladium, Hastelloy, Copper, Teflon (PFA)



## What is 'Segmented Flow Chemistry'?

Segmented flow chemistry broadens your chemistry space via extreme reaction conditions: 300 °C and 150 Bar. With segmented flow, screening of new reaction conditions can be accomplished in as little as 100 µL of material, which allows more screening with less precious material. In addition, segmented flow enables a high level of automation, which includes the automation of reaction scheduling, preparation, temperature, incubation time and online LCMS analysis.

## Why consider 'Segmented Flow Chemistry'?

Consider adopting segmented flow when reactions using traditional chemistry tools are not working or are considered hazardous like those used in Click chemistry (azides). As segmented flow chemistry enables extreme inert reaction conditions, many reactions that cannot be explored in standard glassware or by microwave can be successfully converted in segmented flow.

Extremely organic and caustic reagents can be used in the Propel:

- H<sub>2</sub>SO<sub>4</sub>
- LiHMDS
- Bromine
- BuLi
- HCl

## How does Segmented Flow Chemistry Work?

Segmented flow chemistry works by automatically metering and mixing specific reaction mixtures called segments using the fluidics shown in Figure 1. Segments are delivered into a HPLC type injection loop and injected into a high temperature and high pressure flow reactor environment (Figure 2). The reaction segment is incubated through the reactor using 'Push' technology. Incubation rate (time) is controlled by the flow rate (µL/minute). Segment experiments flow through the reactor as a continuous segment with minimum diffusion as shown in (Figure 3).

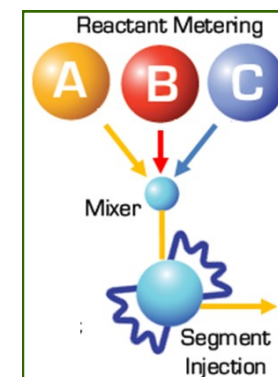


Figure 1—Segment Preparation

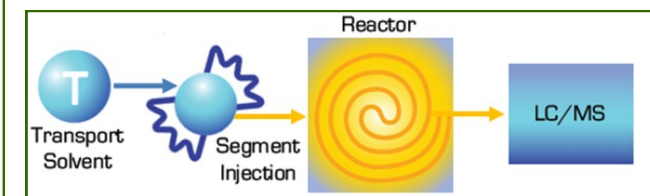


Figure 2—Segment Injection

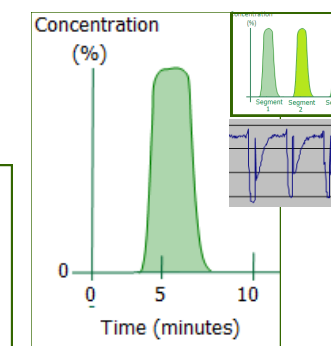


Figure 3—Segment

## What are the benefits to Segmented Flow Chemistry?

- **Extreme reaction conditions:** 300 °C and 150 Bar
- **Low volumes:** segments as small as 100 µL are routinely processed, conserving starting material during screening and optimization
- **Aggressive Reagents:** with Accendo's "Push" technology extremely aggressive reagents can be used
- **Automation:** reaction preparation (metering, mixing and reaction control)
- **High throughput:** with serial/parallel operation, 10 times better than other flow systems
- **Scaling:** milligram to gram quantities with no re-optimization of conditions
- **Online Analysis:** Both the Conjure and Propel can be integrated to online LCMS for real-time analysis



Accendo Corporation  
3762 S Carson Avenue  
Tucson, AZ 85730  
+1.650.877.2867  
Info@accendocorporation.com  
www.accendocorporation.com