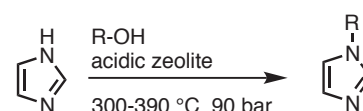
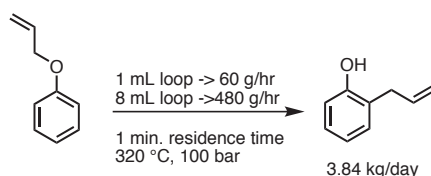



PHOENIX

Expand Your Chemistry Capabilities with the Phoenix Flow Reactor Series



- 450 °C, 200 bar capability safely
- Homogenous and heterogeneous reactions in one reactor
- From mg to kg scale synthesis without system modification
- New process development
- Fast catalyst screening
- Upgradeable for more chemistry and automation
- Rapid heating and cooling without solvent limitation
- Wider parameter space than microwave



BASIC SYSTEM

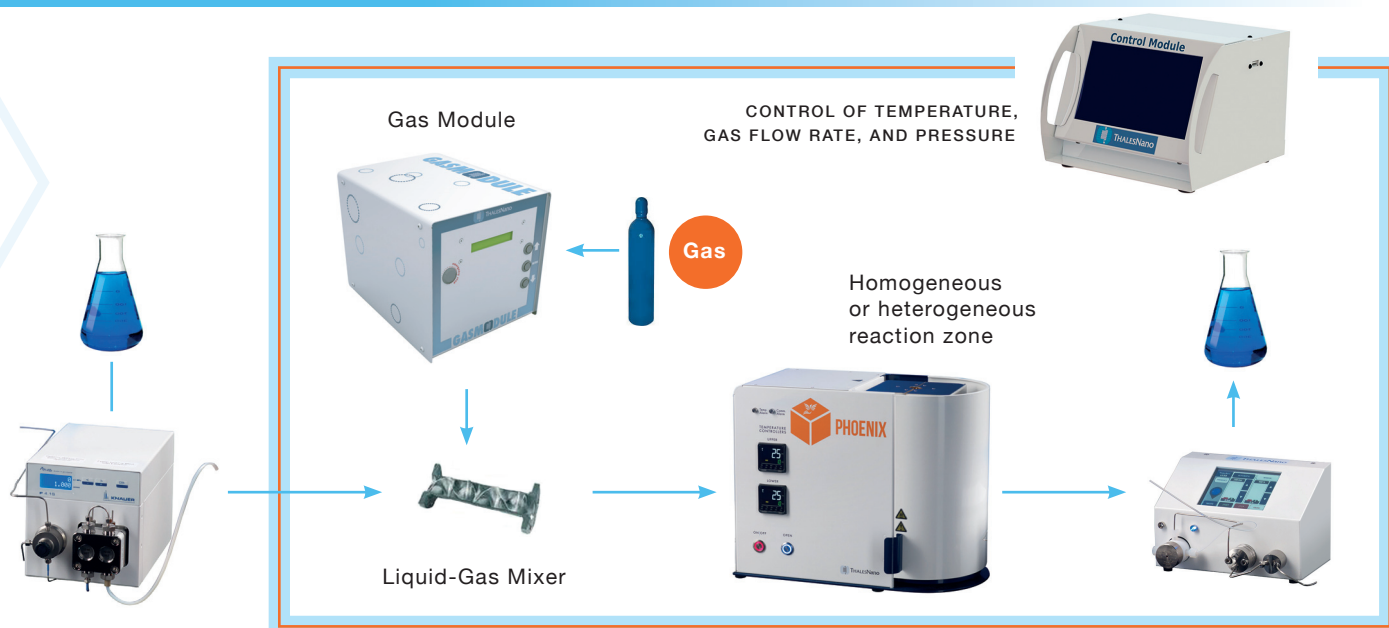


High p regulation

Phoenix Flow Reactor

HPLC Pump

PROFESSIONAL SYSTEM



Gas Module

CONTROL OF TEMPERATURE,
GAS FLOW RATE, AND PRESSURE

Gas

Homogeneous
or heterogeneous
reaction zone

Liquid-Gas Mixer

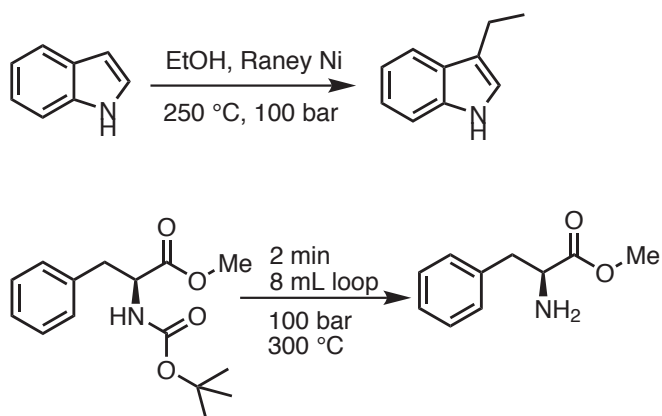
COMPARISON TABLE

Specification	Basic	Professional
Temperature range	RT– 450 °C	
Pressure range	0–200 bar (max. 100 bar when gas is introduced)	
Liquid flow rate range	0.1–10 mL/min	
Gas flow rate	NA	Max. 100 mL/min
Devices	1) HPLC pump 2) Phoenix Flow Reactor 3) Pressure Module	1) HPLC pump 2) Gas Module 3) Phoenix Flow Reactor 4) Pressure Module 5) Control Module
Control	Independently on each device	Via the Control Module
Heated elements included	Yes	Yes
#of liquid introductions	1 (more is optional)	1 (more is optional)
#of gas introductions	NA	1 (more is optional)
For homogeneous reactions	8 mL Stainless steel loop with holder Max. 450 °C and 200 bar	
For heterogeneous reactions	30 and 70 mm CatCarts with holder: 0.38 and 0.76 mL volume, respectively: max. 250 °C and 200 bar	
Application area	S _N Ar reactions Boc removal Claisen rearrangement C-alkylation N-alkylation Supercritical reactions Heterocycle synthesis	Addition to Basic Configuration: Hydrogenation Oxidation Carbonylation

UPGRADEABLE TO INCREASE CAPABILITY



Pick and Choose Your Reactor Zones and Packages



Phoenix starter package

Coiled loop holders with 4 and 8 mL SS, various 30 and 70 mm CatCarts and their holders

Phoenix General Package

125 mm, 1/4" Metal-Metal sealed cartridge and its holder, various 30 and 70 mm CatCarts and their holders, 4 and 16 mL coiled SS loops, MidiCarts and their holders

Homogeneous Package

Coiled loop holders with 4, 8 and 16 mL SS loops respectively

Scale-up package for heterogeneous reactions

125 and 250 mm (1/2") columns and their holders

Scale up package for homogeneous reactions

16 mL Teflon and SS loops with their holders

Type	Volume / mL	Max. T / °C
MidiCart, CatCarts		
MidiCart	7.6	150
30 mm CatCart	0.38	250
70 mm CatCart	0.76	250
Metal-metal Sealed columns		
125 mm (1/4 SS id 3 mm)	0.9	450
125 mm (1/4 SS id 3.8 mm)	1.3	450
125 mm (1/2 SS id 9.4mm)	9	450
250 mm (1/4 SS id 3 mm)	1.8	450
250 mm (1/4 SS id 3.8 mm)	2.6	450
250 mm (1/2 SS id 9.4 mm)	18	450
Loops		
Teflon (up to 15 bar)	4, 8, 16	150
Stainless Steel, Hastelloy	4, 8, 16	450

The Phoenix Flow Reactor and its system variations gives you maximum flexibility to perform either homogeneous or heterogeneous reactions and to scale them up easily.

You are able to upgrade your setup from one system variation to another and the modularity approach allows more configurations to tune the Phoenix Flow Reactor to how you want to use it.

For more information on how flow chemistry can benefit you, please, visit www.thalesnano.com

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