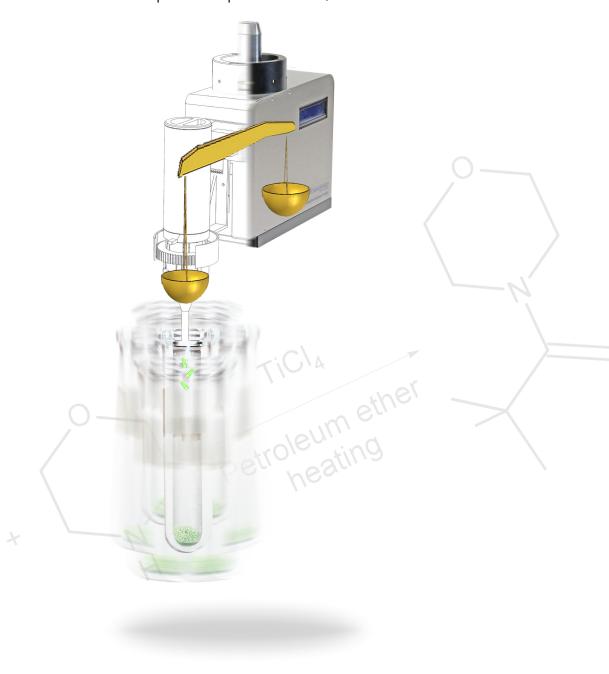
SYNTHEZISER PRORES

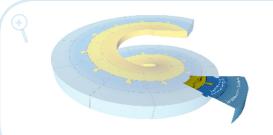
from concepts to success

- Process research (screening & optimization of critical process parameters) -





from concepts to success





Cool to 0°C, start agitation

Robotic tool exchange interface

Action

robotic tools

High shear homogenization

Reflux condenser, Evaporation

for 100 ml crimp reactors or

• Fiber, textile, hair treatment

(11,000 to 30,000 rpm)

Ultrasonic dispersion

Degassing

hlenders

Filtration

• Injection molding

Foam formation

• Free film generation

Capping, crimping

solution in

of various

Heat to various temperatures

React for various amount of time

Evaporate to

Filtrate

Dissolve in Toluene

Inject to GC for analysis





SYNTHESIZER PRORES, a modular robotic platform enabling process research

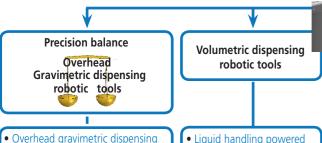
SYNTHESIZER PRORES is Chemspeed's software-driven robotic platform for challenging routines in early process research such as process finding, reaction parameters screening, execution of DoE worksheets, optimization of reactions, work-up and putification condition.

- SYNTHESIZER PRORES brings paradigm shifting modularity enabling an easy to use workflow task driven software
- Unrivaled gravimetric dispensing technology directly immersing into the target including an anti-drip system which avoids cross contamination
- Unique reactor block and reactor array technology
- A large choice of hardware and software tools allow fine tuned adaptation to your workflow



Unrivaled gravimetric dispensing technology & exchangeable robotic tools

More than 30 features can be delivered with Chemspeed's unique robotic tool exchange technology, including unrivaled overhead gravimetric dispensing tools. Dispensing solids is as convenient and accurate as dispensing liquids. The product development R&D cycle is accelerated.



- of powders and solids (1 mg to 100 g, readability: 0.1 mg) 100+ ml
- (readability: 0.1 to 1.0 mg)
- Overhead gravimetric dispensing and aspiration of high viscous liquids such as pastes and creams (1 mg to 100 g, readability: 1.0 mg; 1 mPa·s to 500 Pa·s)
- Heated cartridges up to 100°C (e.g. for waxes) readability: 1.0 mg
- Overhead gravimetric & volumetric dispensing and aspiration of viscous) liquids with disposable positive displacement tips (1 mg to 100 g, readability: 1.0 mg; 1 mPa-s
- Including density measurement (aspiration technology) on the fly, readability: 0.1 mg
- Liquid gas dispensing (up to 2,000 g, readability: 0.1 mg)





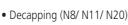


- Viscosity range from 1mPa·s up to 200 mPa·s.
- Special options:
- Disposable tips Disposable syringes
- Heated needles
- Spray needles pH probe











Particle size distribution and dynamic light scattering

Analytic

robotic tools

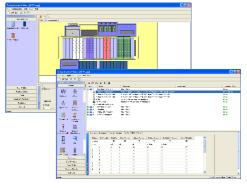
- pH and temperature measurement, control and adjustment, even while in line powder dispensing
- Tri-gloss measurement
- Thickness measurement
- Color measurement
- Observation of dissolution
- Precision tack-cure
- Density measurement (positive displacement)
- Density measurement (aspiration technology) on the fly, readability: 0.1 mg)



Powered by AutoSuite SYNTHESIZER PRORES user interface

AutoSuite SYNTHESIZER PRORES is an intuitive user interface software which allows easy workflow orientated programming. Many features such as the gravimetric dispensing steps are automatically calibrated, eliminating tedious optimisation steps.

- The AutoTeaching tool allows to dispense solids, liquids, viscous liquids, and waxes without manual optimizing steps, and with high precision, accuracy and speed
- Easy programming: drag-and-drop workflow steps
- Smooth integration into Chemspeed's workflow management software (see reverse)
- AutoSuite Application Programming Interface (API) for 3rd party software and hardware integration (standard integration of Spotfire, JMP, VirtualLab etc. as well as many instruments listed on the reverse page)





Highly-functional disposable and reusable reactors format

Chemspeed is able to dispense virtually any type of compound into any type of container (vial, microtiter plates, bottles, reactors, formulation vessels etc.)

(Please refer to other Workflow Brochures)

Key Features:

- Interface for DoE
- Jacketed glass reactors in different sizes (2 ml 100 ml)
- Heating/ cooling via jacket from -70 to 180°C
- Individual heating function available
- Reaction scheduling software
- All relevant work-up & purification unit operations can be run:
 - evaporation under vacuum/ heating
 - filtration (left to right or to waste)
 - liquid/liquid & solid-phase extraction
 - crvstallization
 - Dean-Stark
- Glass reactors for ambient pressure, stainless steel reactors for pressures up to 100bar
- Multi-step and branched workflows
- Reflux condenser
- Different agitation principles (mechanical & vortex)
- · Automated overhead addition of chemicals
- Temperature control via jacket and via internal measurement
- Overhead sampling
- Disposable formats for sample work-up and sample preparation
- In-and-online analytics available or interfaced (pH, HPLC, GC etc.)
- Superior inert condition

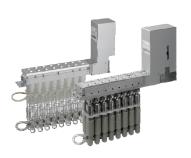


NOW AVAILABLE: Disposable glass reactors

Overhead gravimetric dispensing of solid in high-performance disposable reactor



SYNTHESIZER PRORES deck view



Arrays of double-jacketed glass and stainless steel reactors



Choice of various reactor sizes: 100 ml, 75 ml, 27 ml, 13 ml, 2 ml



Accessories

All tools and accessories of Chemspeed 's Swing, Sweigher, Swave, AutoPlant, Formax, Applicator and Investigator are fully compatible with the **SYNTHESIZER PRORES** robotic platform and vice versa (see the high output product development spiral below). Please refer to Chemspeed's other workflow brochures for modularity examples.

- Reaction scheduling software
- Individual heating module
- Heating/cooling/shaking in disposable formats
- HPLC, GC including corresponding interfaces
- Analytical probes (temperature, pH) measurement tool
- Large choice of sample, reagent and customized racks
- Cleaning module
- Tailor-made customer care module



High output product development spiral

Chemspeed's AutoSuite workflow management software integrates with:

1. All of Chemspeed's robotic platforms for

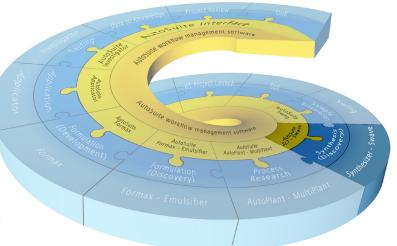
- Sample preparation workflows
- Parallel array synthesis workflows
- Parallel process research workflows
- High output formulation workflows
- High output application workflows
- High output testing workflows

2. Third party instruments

Chemspeed integrates a vast number of 3rd party components (e.g. in robotic tools). Please refer to Chemspeed's Worfklow Portfolio brochure and/ or contact your Chemspeed's representative.

3. Third party software such as

- SpotFire (premium data visualization and selection)
- JMP (design of experiments DoE)
- VirtualLab (lab journal, workflow management, instrument control)
- and many other laboratory software through industry standard languages (SQL, .net, C#, etc)



Harware - Software - Logistics Chemspeed Technologies offers all.



