

SYNPLE



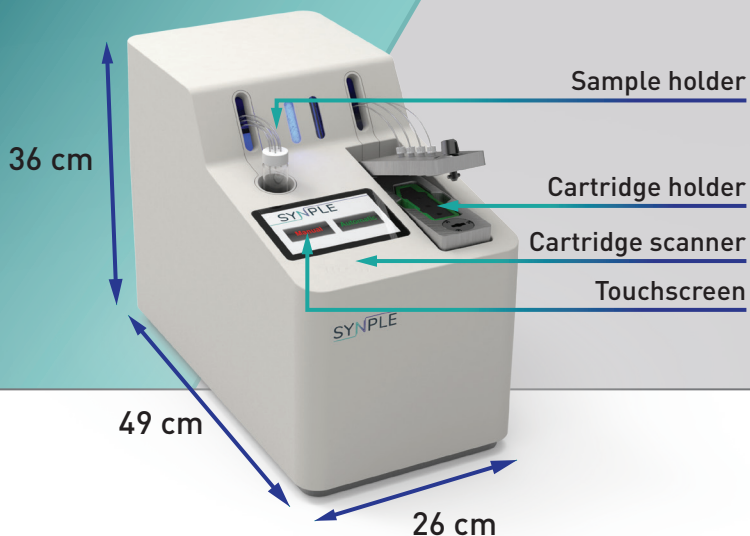
**Capsule chemistry
at the touch
of a button**

Fully automated
reaction cartridge
synthesis

Enabling faster, safer, and
more efficient chemical synthesis

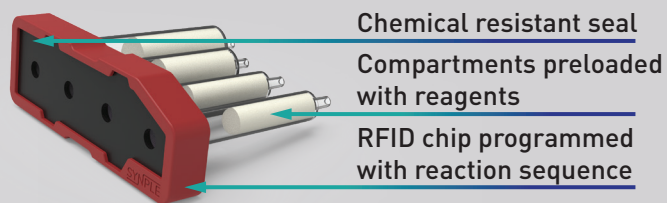
New fully automated disposable reagent cartridge system for rapid and easy synthesis of new molecules

Synple 2 Automated Synthesizer



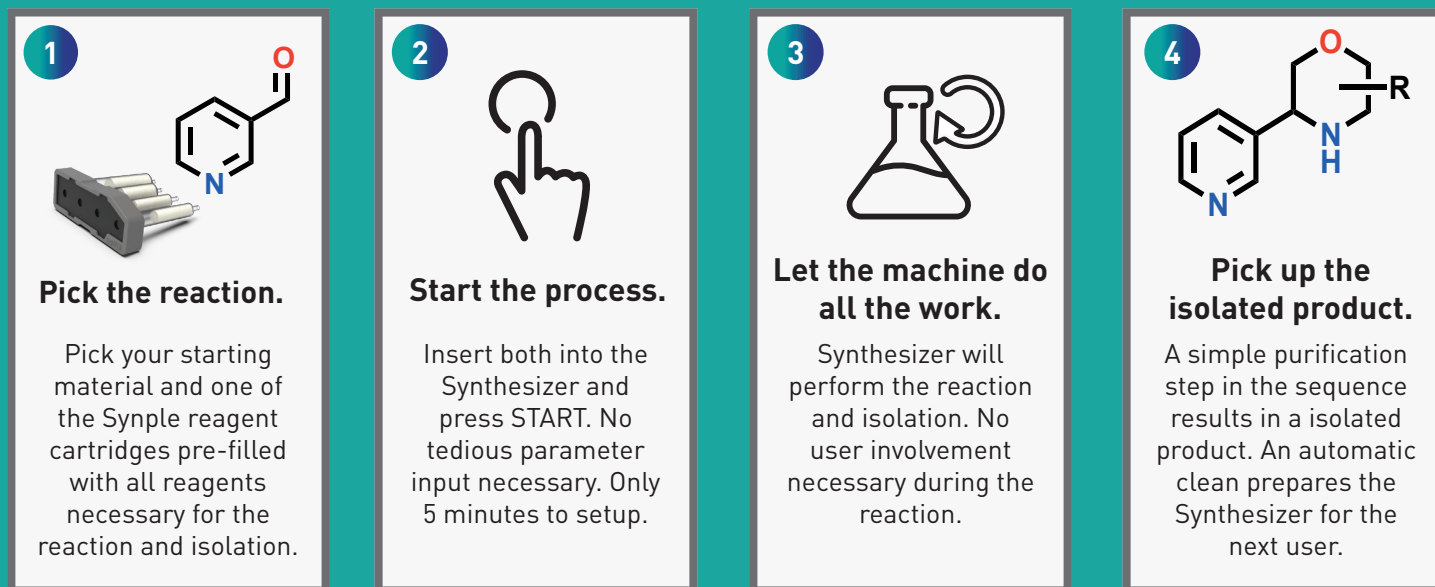
- Compact, easy to use device that fits easily into a fume hood, whilst leaving plenty of space for others reactions.
- Capable of heating (20-80°C) and stirring the reaction. Utilises both batch and flow chemistry techniques.

Reaction Cartridge



- Pre-optimized reaction protocols for each cartridge stored on RFID chip. Key reaction parameters can be modified for challenging substrates.
- Reagent cartridge contains everything necessary for the reaction, work-up and isolation.
- Variety of pre-packed reaction cartridges available to order now.

How to start a reaction in 5 minutes:



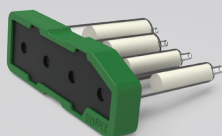
Example - Reductive Amination:



Aldehyde /
Ketone



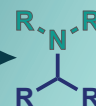
Primary /
secondary
amine



Disposable
reagent
cartridge



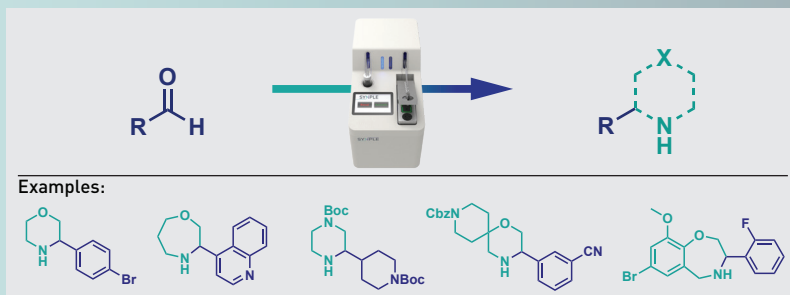
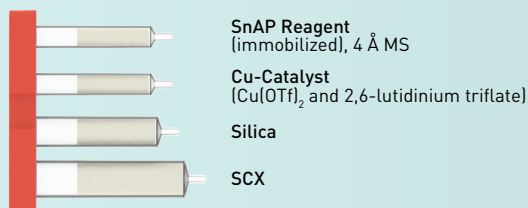
5 hours, up to 0.5 mmol



Product
amine

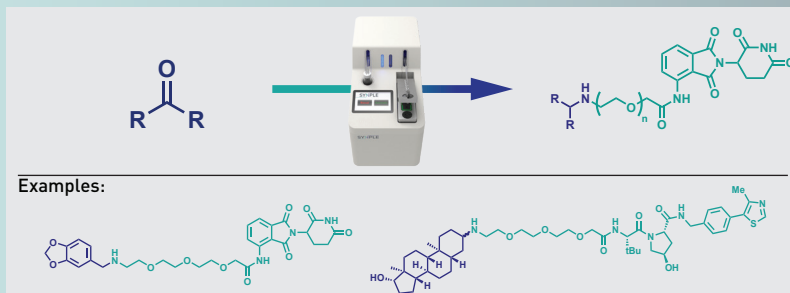
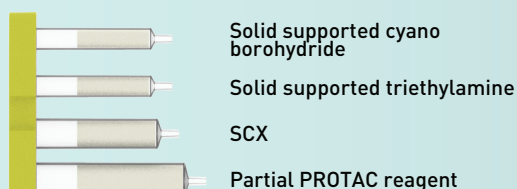
Molecular Construction (MC)

Heterocycles



- range of cartridges for different N-Heterocycles
- up to 0.5 mmol
- 12 hours reaction time
- no exposure to SnAP reagents

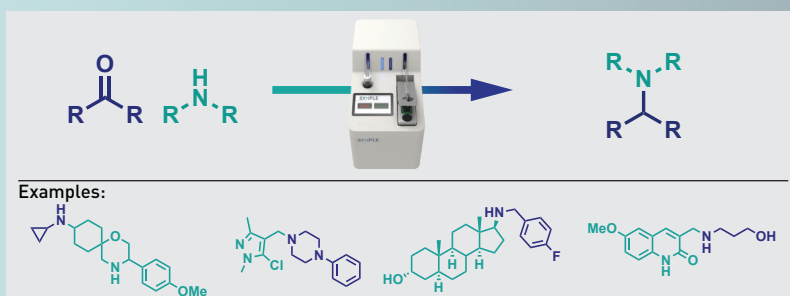
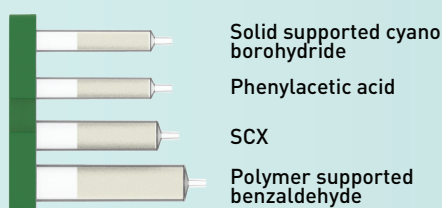
PROTAC synthesis






- via reductive amination or amide formation
- VHL and CRBN partial PROTACS with different linkers available

- up to 0.2 mmol
- 12 hours reaction time

Reductive amination

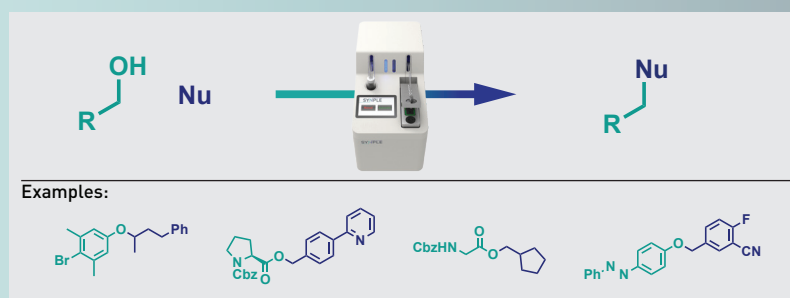
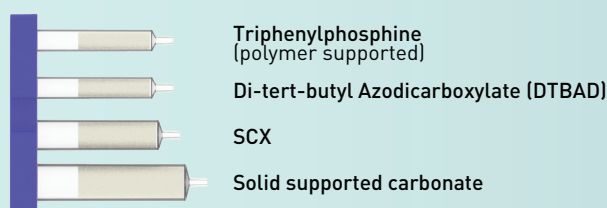


- flexibility by choosing both reaction partners
- up to 1.5 mmol
- 5 hours reaction time

+ see application notes for examples on  Biotinylation,  Amide formation and  Suzuki coupling

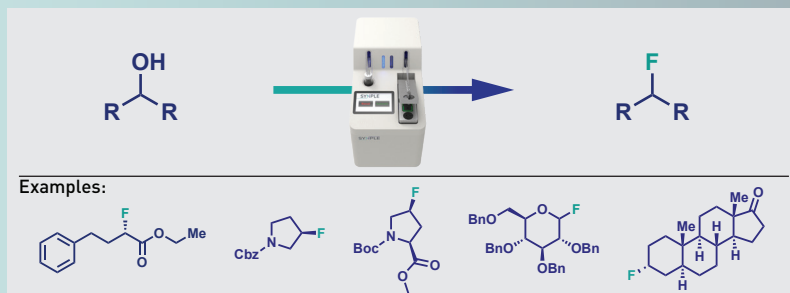
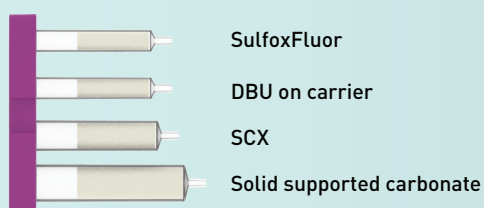
Functional Group Interconversion (FGI)

Mitsunobu




- no tedious removal of PPh₃O necessary
- up to 0.5 mmol
- 8 hours reaction time

Deoxyfluorination

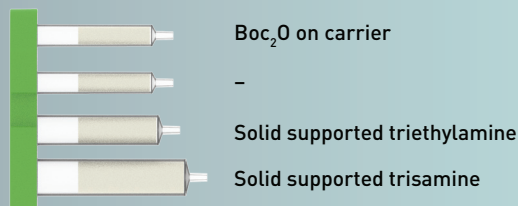


- powerful late stage functionalization tool
- up to 0.2 mmol
- 6 hours reaction time

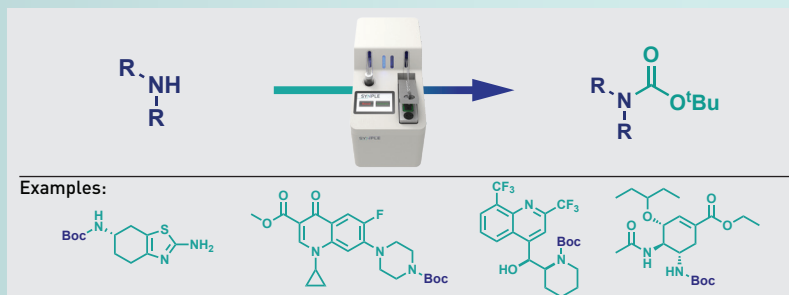
+ see application notes for examples on  Azide formation

Protecting Group Chemistry (PGC)

Boc protection



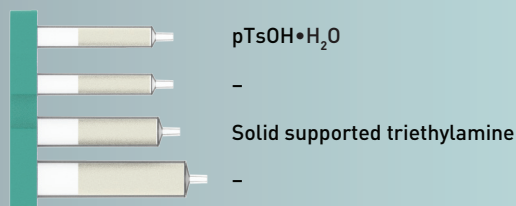
- suitable for primary and secondary free amines and amine salts



- up to 1.5 mmol

- 2-5 hours reaction time

Silyl deprotection

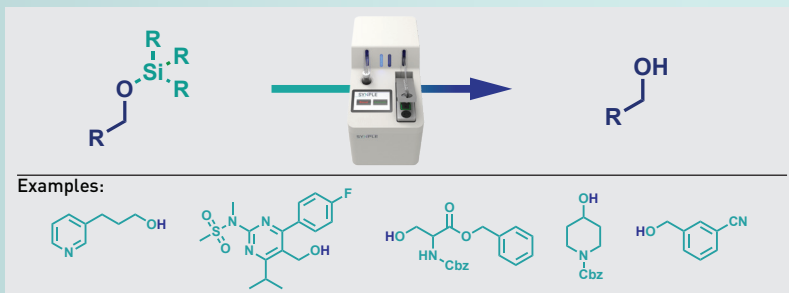


- suitable for TBS, TES and TIPS

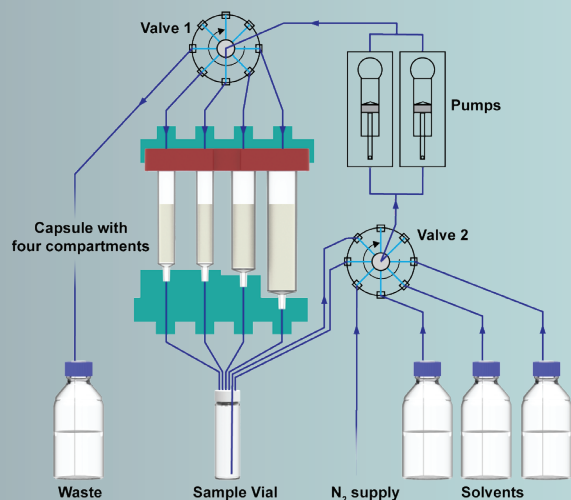
- up to 0.5 mmol

- 3 hours reaction time

+ see application notes for examples on Boc deprotection, Cbz protection and Nosyl protection



How does Synple work?



Automated Process

- User adds starting materials to sample vial.
- Solution is automatically pumped from vial to cartridge compartment 1 and back to vial again.
- Continuous circulation through defined compartment for specified time period before switching to next compartment, as required for each reaction class.

Product isolation

- Automated system and cartridges enable synthesis AND product isolation.
- Cartridges also contain materials for work up and product isolation (resins, scavengers etc.).
- ≥ 90% purity possible for majority of reactions
- Only final solvent evaporation required.

The Synple system consists mainly of syringe pumps, rotary valves and the cartridge holder. All wetted components consists of either Teflon or glass, leading to a very high compatibility and robustness towards various solvents and chemicals.

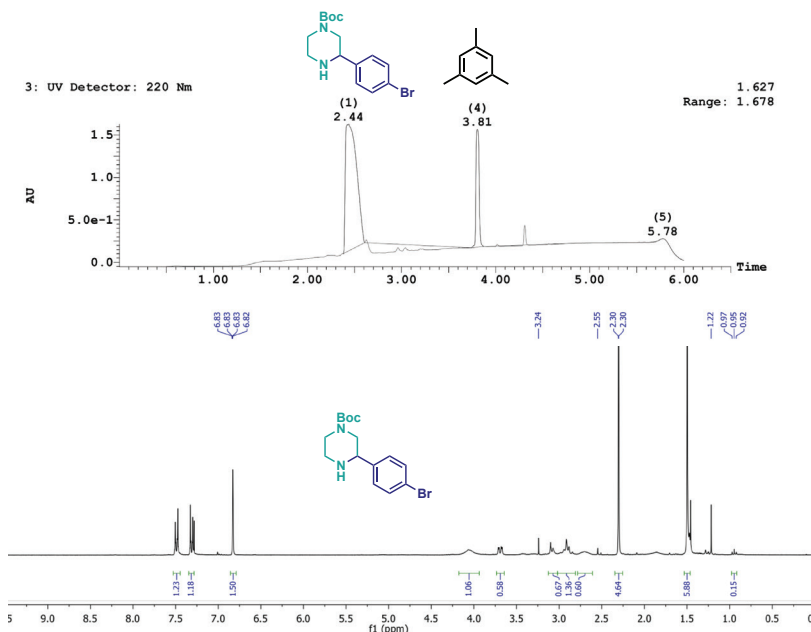
The automated reaction sequence directs the flow of reagents and solvents required for the particular reaction step. An optional inert gas connection facilitates preserving an inert environment and the dryness of attached solvent. The special configuration allow either to run a reaction step.

Key Features

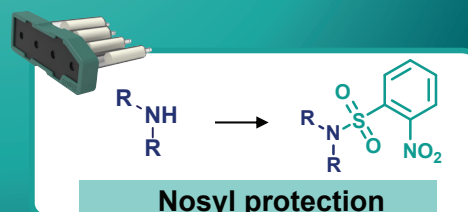
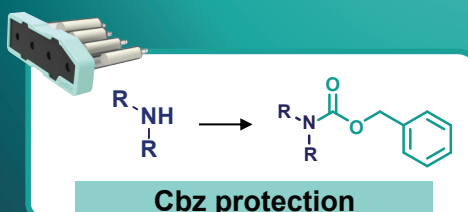
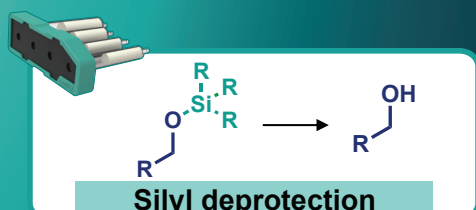
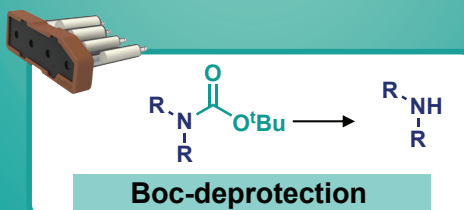
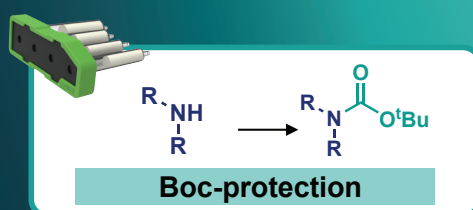
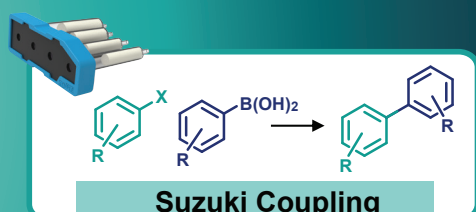
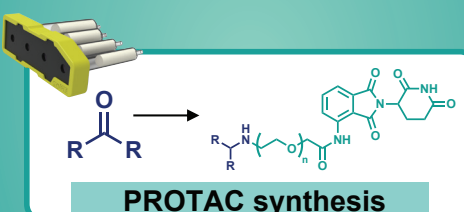
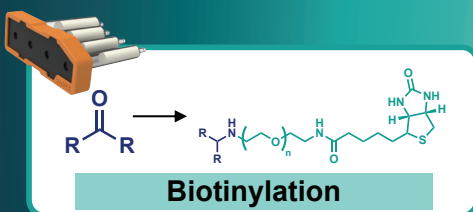
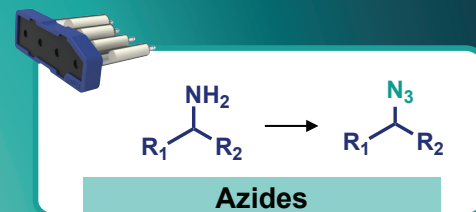
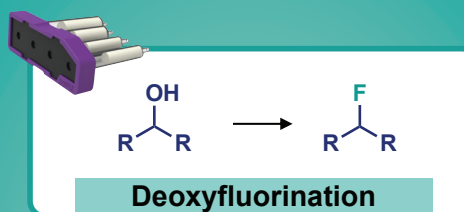
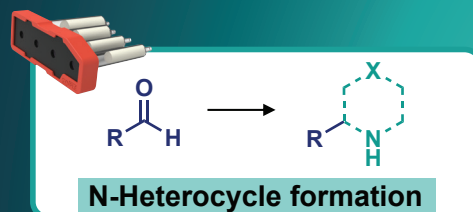
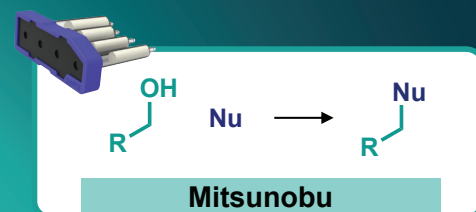
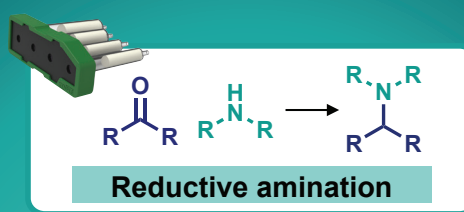
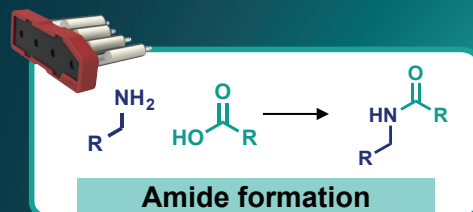
- Batch-Flow hybrid system provides flexibility to develop methods suited to particular chemical reactions.
- High quality, robust commercial rotary valves and syringe pumps.
- Automated protocols control entire process – repeated circulation from sample vial, through a compartment and back to the sample vial.

LC trace and ¹H NMR spectrum of N-Heterocycle formation directly after automated run without further purification:

(internal standard added after reaction @ 3.81 min). Approx. 90% purity.



Applications:



More reaction classes coming soon!

Chemical synthesis needs to evolve and adapt to the challenges of the future and free itself from the constraints of laborious and time-consuming processes. New technologies must strive to provide safe, effective and productivity enhancing solutions. Our new automated capsule-based synthesizer addresses all these issues and more!

Chemistry of the future...

Our new automated cartridge-based synthesizer provides a safe, effective and productivity enhancing solution, that enables the user to free themselves from the constraints of laborious and time consuming processes.

Cartridge-based synthesis...

Working in an analogous manner to a capsule coffee maker, this small and compact machine utilizes commercially available, pre-packed, highly optimized reaction cartridges, that contain all the materials required for the transformation of the starting material, and the subsequent work-up and isolation.

A productivity enhancing solution...

Akin to having an „extra pair of hands“, the automated synthesizer requires only the addition of the starting material to the reaction vial, followed by scanning and insertion of the desired disposable reaction cartridge to load the pre-optimized method. At the touch of a button the product can be generated, worked-up and isolated, thus enabling you to focus your efforts elsewhere!

Safe and efficient...

Following the generation of the desired product, an automated washing sequence allows the machine to be used directly by another user without risk of contamination. With all the chemicals and solvents required for the transformation, as well as the waste generated safely contained, the risk of user exposure is drastically reduced. Thus this technology offers not only time-saving, productivity, and efficiency benefits, but it also offers a far safer process than the respective traditional synthetic procedures.

SYNPLe

Enabling faster & more efficient discovery cycles



10x More efficient

...compared to manual synthesis. Maximum 5 min. to setup the reaction.



70% Lower costs

...compared to classical synthesis (reagents and work time).



Small footprint

Minimum lab space used. - 26 x 49 cm.



No exposure to toxic chemicals

Fully enclosed reaction setup.



90% Less waste

Fully optimized synthetic protocol.



Plug&Play

No special training required. Fast and easy setup. Low maintenance

Automated parallel / library synthesis - Synple Unity

Synple Unity...

- Generate a small library of compounds in just 24 hours, without the need for method optimisation, or a larger library within a few days.
- Machines are controlled through a central terminal.
- The system can be simply expanded later as required by adding more Synple devices.
- Synple units can be fed over central solvent storage.
- Reliable and robust system: Failure of one machine will not bring down the whole system.



For more information please visit:

www.synplechem.com info@synplechem.com

