

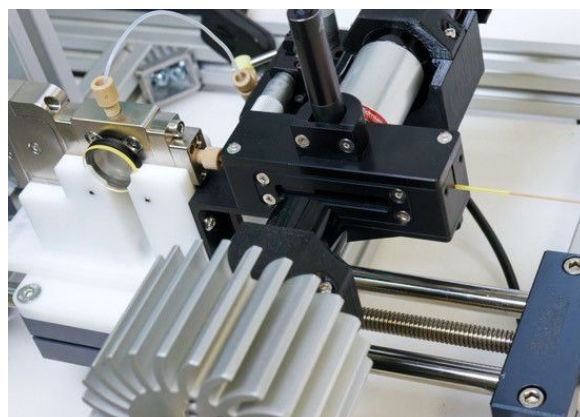
UV-CROSSLINKED MICROCAPSULE PRODUCTION PLATFORM

INTRODUCTION

The UV-crosslinked microcapsule production platform, developed and manufactured by Secoya Technologies, revolutionizes the process of creating core-shell microcapsules by providing seamless control over microcapsule size and composition.

Utilizing double emulsion microfluidic methodology, the RayDrop platform ensures the generation of uniform double emulsions by producing consistently monodisperse microcapsules. Complemented by Fluigent Flow Controllers, Flow Units, and an injection loop, the platform guarantees exceptional flow stability and responsiveness, essential for precise synthesis. The open design of the platform makes it adaptable to a user's needs.

Featuring integrated microfluidic, mechanical, optical, and UV modules, the platform facilitates a straightforward, rapid, and user-friendly operation. With meticulous attention to detail, the UV-crosslinked microcapsule platform produce tailored sizes and structures, unlocking a variety of applications across diverse fields, including drug delivery, tissue engineering, and crystallization.

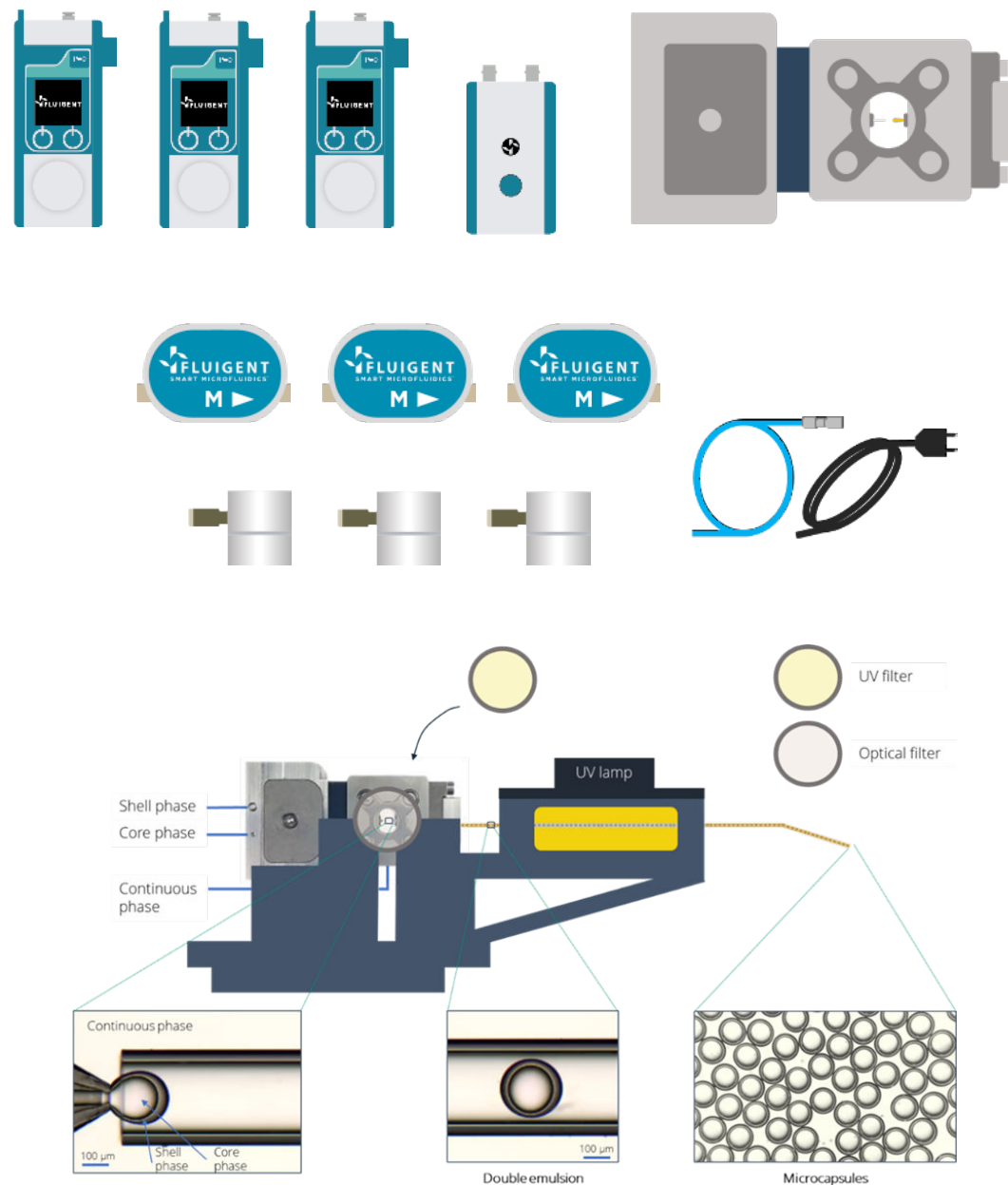


Version Mar. 24

PLATFORM DESCRIPTION

- RayDrop double emulsion device
- 3 Flow EZ pressure controllers (0-7 bars)
- 5 reservoirs
- 3 flowmeters
- Complete and pre-connected flow path
- Complete optical system
- L-Switch (optional, for small sample platform)
- Complete UV-module for shell crosslinking

The platform is designed for use in fume hoods, specially designed cabinets, and gloveboxes. Maximum operating conditions can be limited depending on the fluid couple used. Adaptations of the Raydrop can be tailored to a user's specific needs upon request.



PRODUCT DESCRIPTION

| Description | Product | P.N |
|--|---|--|
| | UV-crosslinked microcapsule production platform | O-DE-STDWR-PTF O-SP-UVL365-PTF |
| Double Emulsion Production Device | <ul style="list-style-type: none"> • RayDrop double Emulsion 90-160-450 | O-DE-RDRPC02-EUP |
| Fluid Handling System | <ul style="list-style-type: none"> • Link Module • Flow EZ 7 bar for all 3 phases | <ul style="list-style-type: none"> • LU-LNK-0002 • LU-FEZ-7000PCK |
| Reservoirs | <ul style="list-style-type: none"> • Continuous phase: 50 mL Pcap with 50 mL Falcon tube Tubing: 500 µm • Shell phase: 15 mL Pcap with 15 mL Falcon tube Tubing: 125 µm • Core phase: 15 mL Pcap with 15 mL Falcon tube Tubing: 125 µm | <ul style="list-style-type: none"> • P-CAP50-HP-PCK • P-CAP15-HP-PCK • P-CAP15-HP-PCK |
| Flow Meters | <ul style="list-style-type: none"> • Continuous phase: Flow Unit L • Shell phase: Flow Unit M • Core phase: Flow Unit M | <ul style="list-style-type: none"> • FLU-L-D • FLU-M-D • FLU-M-D |
| Optical System | <ul style="list-style-type: none"> • Light source • Microscope objective (x10) • Specific color camera (up to 400 fps, 1µs integration time) • XYZ translation stages | • N/A |
| UV module | <p>UV led head 365:</p> <ul style="list-style-type: none"> • Wavelength: 365 nm • Peak Irradiance: 1000 mW/cm² at 10mm (with focus lens) • Optics for 5 mm spot at 5 mm • External Diameter: 12 mm <p>UV control Unit:</p> <ul style="list-style-type: none"> • Input voltage 84 - 264V AC • Max power delivered: 50W (24 VDC - 2,1 A) <p>RayDrop holder, UV protective box and a glass capillary</p> | O-SP-UVL365-PTF |

| Description | Product | P.N |
|--|---|---|
| Tubing & Fittings | <ul style="list-style-type: none"> Tubing: OD: 1/16 and 1/32 OD ID: 250 µm & 500 µm Materials: PFA Manual valves: 4 way valves 2 way valves Filters: 2 µm filter for continuous phase 2 µm filter for dispersed phas | <ul style="list-style-type: none"> N/A |
| Wetted materials | <ul style="list-style-type: none"> Platform: PEEK, PFA, PCTFE, PTFE, SS316L, GLASS Sealing: FFKM | <ul style="list-style-type: none"> N/A |
| Unit dimensions | <ul style="list-style-type: none"> 61 x 46 x 43cm 3 (L x W x H) | <ul style="list-style-type: none"> N/A |
| Droplet Size Range (For- mulation and RayDrop configuration dependent) | 180 - 400 µm | <ul style="list-style-type: none"> N/A |

OPTIONAL: INJECTION LOOP

P.N: [O-FACS-INJ-LOOP]

6-Port/2-Position BiDirectional Injection

The Injection loop™ is a bidirectional 6-port / 2 position valve for injection of low volumes of biological materials. It is ideal to inject rare samples as it closes them up to the microfluidic chip which reduces the dead volume, and avoids contamination of the platform's fluidic path.



Benefits



Compact
Save bench space



Ease of use
Operate within a minute



Automation
OxyGen to write protocols



No dead volume
Get accurate results



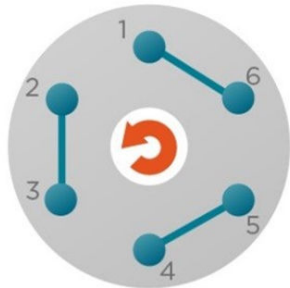
PRODUCT DESCRIPTION

| Description | Product | Part Number |
|-------------------------------|--|-------------|
| Injection valve | L-switch bidirectional injection valve | LSW001 |
| Microfluidic valve controller | LineUp Switch EZ | ELUSEZ |
| Chain to chain cable | LineUp Chain to chain kit | LU-C2C-0001 |
| Tubing and fittings | <ul style="list-style-type: none"> Tubing: <ul style="list-style-type: none"> ◇ OD: 1/16 and 1/32 inches ◇ ID: 125 µm & 500 µm ◇ Materials: FEP and PEEK ◇ 8* green sleeves ◇ 2* 200 µL sample loop ◇ 1* 100µL sample loop ◇ 1* 50µL sample loop Connectors: <ul style="list-style-type: none"> ◇ 2* tubing/fitting assembly ◇ 2* connectors XP235 with blue ferrules ◇ 6 * fittings F333-NX Needle: <ul style="list-style-type: none"> ◇ 22s gauge Hamilton syringe needle | FLU-L-D |

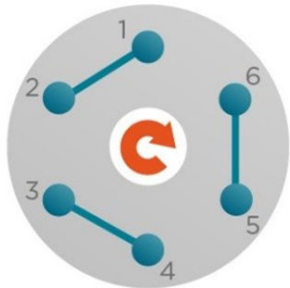
| L-switch performance | |
|-------------------------|-----------------------|
| Internal volume | 660 nL |
| Sample loop volume | 50µL, 100µL, 200 µL |
| Dead volume | None |
| Switching time | 100 ms |
| Maximum Pressure | 7 bar (100 psi) |
| Hardware specifications | |
| Dimensions | 7x9x15 cm3 |
| Weight | 475 g |
| Fittings | Flangeless (1/16" OD) |
| Port communication | RJ45 |
| Power supply | RJ45 |
| Software compatibility | Oxygen |

Technology

The L-SWITCH™ is a 6-port / 2-position injection valve: Peripheral ports (numbered from 1 to 6) can alternatively be connected the right F or the left neighbor. The L-SWITCH™ is actuated by a motor that drives a rotor – where the fluidic path is engraved – against a stator – hosting the fluidic ports.



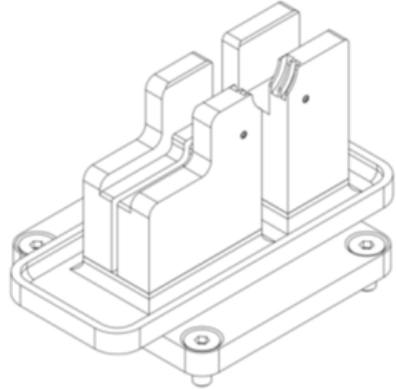
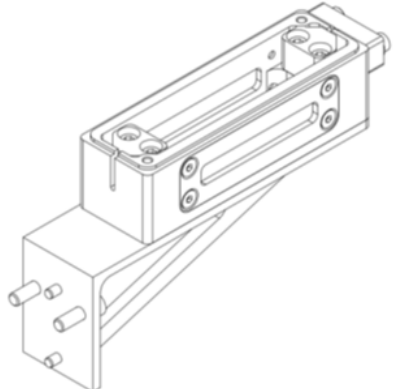
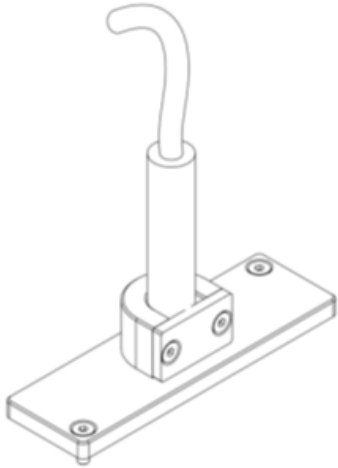
Position 1



Position 2

UV MODULE DESCRIPTION

Raydrop holder and UV box for droplet illumination in a glass capillary, including:

| | |
|--|--|
| <ul style="list-style-type: none"> Raydrop Holder Raydrop Holder specific for connection with the UV box. |  |
| <ul style="list-style-type: none"> UV box UV box for glass capillary illumination. Two glass windows with a UV filter allow for observation of the droplet train in the capillary. The box is UV-tight for user safety. |  |
| <ul style="list-style-type: none"> UV cover Cover for the UV box adapted to UV LED head of 12 mm diameter |  |
| <ul style="list-style-type: none"> Glass capillary coated with polyimide and windowed to allow UV transmission on 5 cm length. | |

UV MODULE DESCRIPTION

UV light source:

| | |
|--|--|
| <p>UV led head 365</p> <ul style="list-style-type: none"> Wavelength: 365 nm Peak Irradiance: 1000 mW/cm² at 10mm (with focus lens) Optics for 5 mm spot at 5 mm External Diameter: 12 mm Length: 87,2 mm Cooling: Air Standards: CE, REACH, RoHS |  |
| <p>Control Unit:</p> <ul style="list-style-type: none"> Selection of insolation time (from 1 second to 99 minutes) Selection of UV intensity (between 20 and 99%) START button, STOP button, key to lock parameters Input voltage 84 - 264V AC Max power delivered: 50W (24 VDC - 2,1 A) Dimensions :330mm x 200mm x 100mm Standards: CE, REACH, RoHS |  |
| <p>Cables:</p> <ul style="list-style-type: none"> Connector: M8/LEMO Type: Female/Male Pins: 4 (Signals & Power) Orientation of the connector: Straight – Straight Length: 2m | |