DATASHEET

UV-CROSSLINKED MICROCAPSULE PRODUCTION PLATFORM

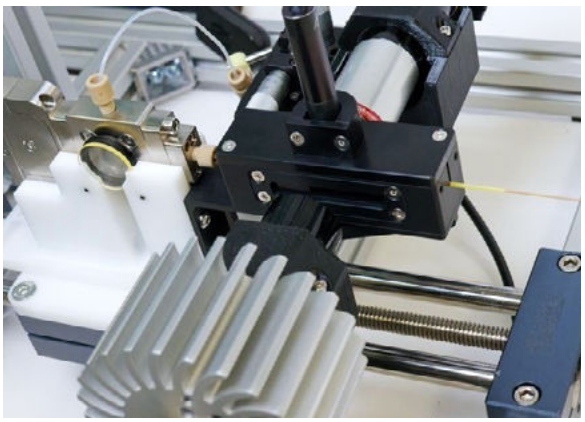
INTRODUCTION

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.





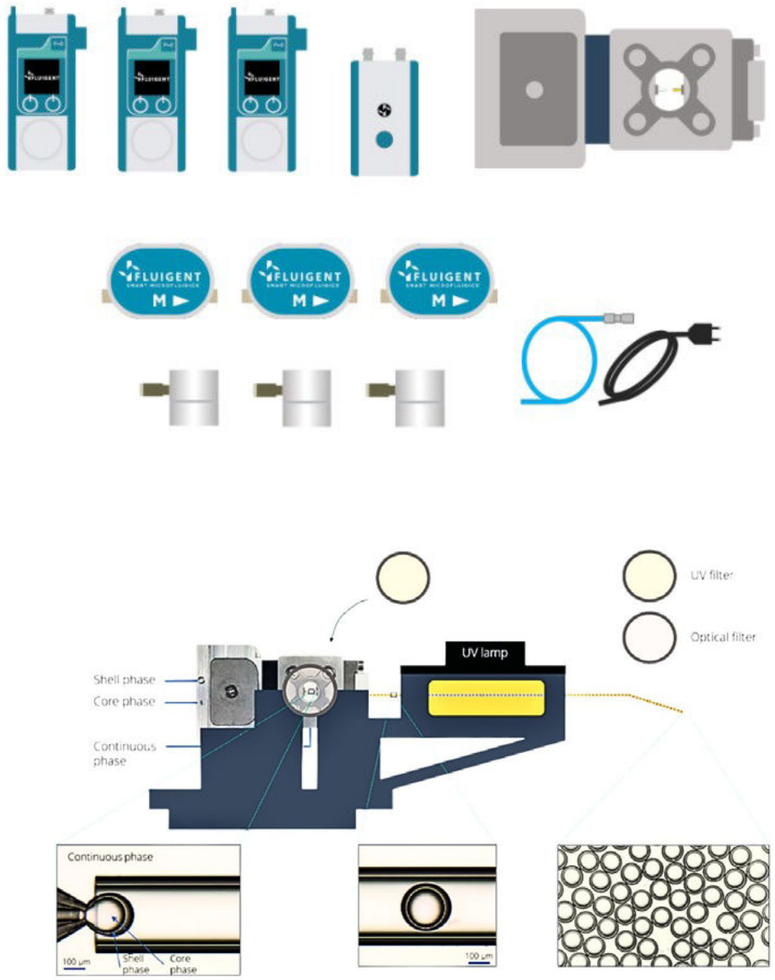
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PLATFORM DESCRIPTION

- 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	• RayDrop double Emulsion 90-160-450	O-DE-RDRPC02-EUP
Fluid Handling System	• Link Module • Flow EZ 7 bar for all 3 phases	• LU-LNK-0002 • LU-FEZ-7000PCK
Reservoirs	• 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	• P-CAP50-HP-PCK • P-CAP15-HP-PCK • P-CAP15-HP-PCK
Flow Meters	• Continuous phase: Flow Unit L • Shell phase: Flow Unit M • Core phase: Flow Unit M	• FLU-L-D • FLU-M-D • FLU-M-D
Optical System	• Light source • Microscope objective (x10) • Specific color camera (up to 400 fps, 1µs integration time) • XYZ translation stages	• N/A
UV module	**UV led head 365:** • 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 **UV control Unit:** • Input voltage 84 - 264V AC • Max power delivered: 50W (24 VDC - 2,1 A) **RayDrop holder, UV protective box and a glass capillary**	O-SP-UVL365-PTF

Description	Product	P.N
Tubing & Fittings	• 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	• N/A
Wetted materials	• Platform: PEEK, PFA, PCTFE, PTFE, SS316L, GLASS • Sealing: FFKM	• N/A
Unit dimensions	• 61 x 46 x 43cm 3 (L x W x H)	• N/A
Droplet Size Range (Formulation and RayDrop configuration dependent)	180 - 400 µm	• 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	• Tubing: ◊ 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: ◊ 2* tubing/fitting assembly ◊ 2* connectors XP235 with blue ferrules ◊ 6 * fittings F333-NX • Needle: ◊ 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

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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.





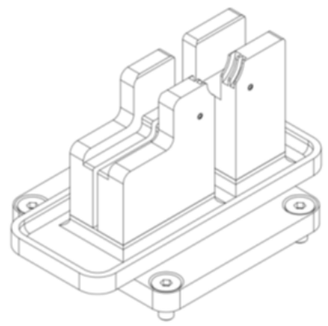
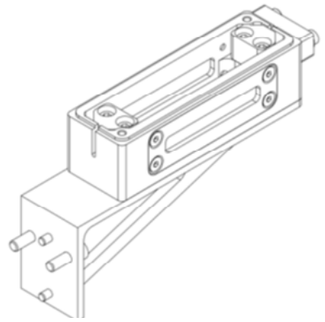
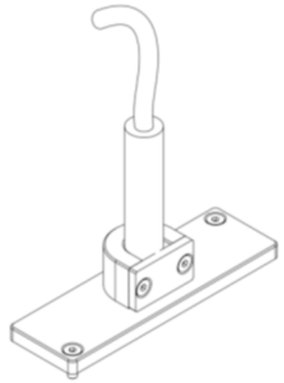
Position 1



Position 2

UV MODULE DESCRIPTION

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

• Raydrop Holder Raydrop Holder specific for connection with the UV box.	
• 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.	
• UV cover Cover for the UV box adapted to UV LED head of 12 mm diameter	
• Glass capillary coated with polyimide and windowed to allow UV transmission on 5 cm length.	

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UV MODULE DESCRIPTION

UV light source:

UV led head 365 - 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	
Control Unit: - 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	
Cables: - Connector: M8/LEMO - Type: Female/Male - Pins: 4 (Signals & Power) - Orientation of the connector: Straight – Straight - Length: 2m	