

CELL ENCAPSULATION PLATFORM FOR FACS

PRODUCT DESCRIPTION

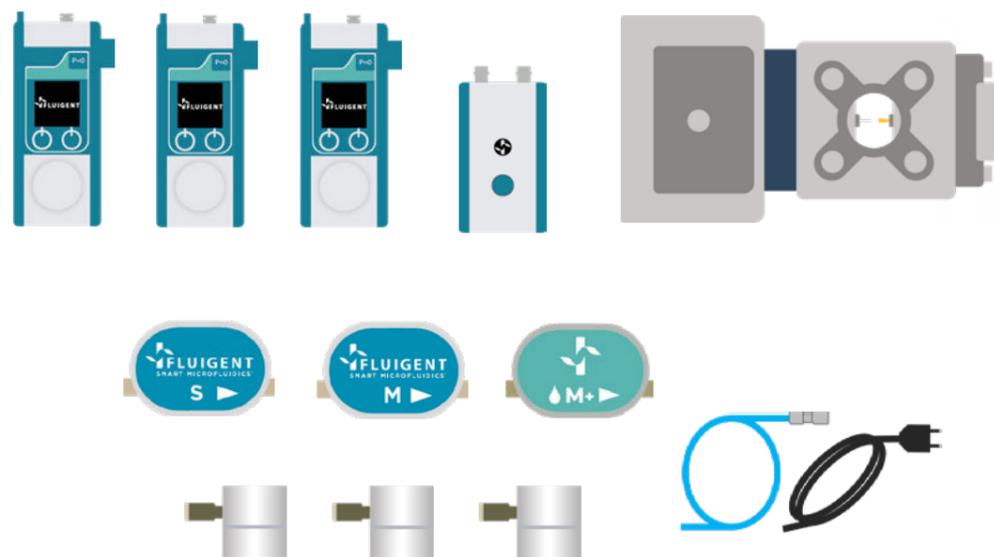
The cell encapsulation platform for FACS is a fast and easy screening tool for high throughput **encapsulation of complex and individual cells within highly monodisperse double emulsion droplets** using [the Raydrop™](#) by Secoya. It includes a comprehensive flow path with pressure controllers, filters, flowmeters, and valves for an easy start-up, shut-down and cleaning of the system in between tests.

A suitable optical system guarantees the optimum visualisation of the double emulsion production process inside the Raydrop™. The open design of the platform makes it adaptable to a user's needs (injection of a small volume of sample, reagent addition...).



PLATFORM DESCRIPTION

- Raydrop Double emulsion
 - 3 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).
- » Designed for use in fume hoods, special designed cabinets, and gloveboxes.
- » Maximum operating condition can be limited depending on the fluid couple used.
- » The platform is adapted for the production of small water-oil-water double emulsions (<90 µm) for cell encapsulation.



In the following, we present different platforms with different emulsification devices to target **different droplet size ranges**:

- Platform S
- Platform S+
- Platform M
- Platform M+

PLATFORM S

P.N: [O-FACSI-PTF]

PRODUCT DESCRIPTION

| Description | Product | Part Number |
|--|---|------------------|
| Double emulsion production device | RayDrop Double Emulsion 30-70-45 | O-DE-RDRPC05-EUP |
| Fluid handling system | • 1*Link module | LU-LNK-0002 |
| | • 3*Flow EZ 7 bars for all 3 phases | LU-FEZ-7000 |
| Reservoirs | • Continuous phase: <ul style="list-style-type: none"> ◇ 1*50mL Pcap with 50mL Falcon tube ◇ Tubing: 500 µm | P-CAP50-HP-PCK |
| | • Shell Phase: <ul style="list-style-type: none"> ◇ 2*15 mL Pcap with 15 mL Falcon tube ◇ Tubing: 125 µm | P-CAP15-HP-PCK |
| | • Core Phase: <ul style="list-style-type: none"> ◇ 2*15 mL Pcap with 15 mL Falcon tube ◇ Tubing: 125 µm | P-CAP15-HP-PCK |
| Flow meters | • Continuous phase: 1*Flow unit L | FLU-L-D |
| | • Shell Phase: 1* Flow unit M | FLU-M-D |
| | • Core Phase: 1*Flow unit M | FLU-M-D |
| Tubing and fittings | <ul style="list-style-type: none"> • Tubing: <ul style="list-style-type: none"> ◇ OD: 1/16 and 1/32 OD ◇ ID: 250 µm & 500 µm ◇ Materials: PFA • Manual valves: <ul style="list-style-type: none"> ◇ 3*4 way valves ◇ 2*2 way valves • Filters: <ul style="list-style-type: none"> ◇ 2 µm filter for continuous phase ◇ 2 µm filters for dispersed phases | N/A |

*Formulation dependent

PLATFORM S

P.N: [O-FACSI-PTF]

FLUIDIC TECHNICAL SPECIFICATIONS

| | Range |
|------------------|---|
| Continuous Phase | • 0±1mL/min |
| Shell Phase | • 0±80µL/min (H2O) • 0±500µL/min (IPA) |
| Core Phase | • 0±80µL/min (H2O) • 0±500µL/min (IPA) |
| Droplet size | • 25-45 µm |

MECHANICAL SPECIFICATIONS

| | Description |
|------------------|---|
| Unit dimensions | • 61 x 46 x 43cm ³ (L x W x H) |
| Weight | • 15 kg without the protective hood • 22.5 kg with the protective hood |
| Wetted materials | • Platform: PEEK, PFA, PCTFE, PTFE, SS316L, GLASS • Sealing: FFKM |

OPTICAL SYSTEM SPECIFICATIONS

| Description |
|--|
| • Light source |
| • Microscope objective (10x) |
| • Specific colour camera (up to 400 fps, 1µs integration time) |
| • XYZ translation stages |

PLATFORM S+

P.N: [O-FACS2-PTF]

PRODUCT DESCRIPTION

| Description | Product | Part Number |
|-----------------------------------|---|------------------|
| Double emulsion production device | RayDrop Double Emulsion 30-70-60 | O-DE-RDRPC06-EUP |
| Fluid handling system | • 1*Link module | LU-LNK-0002 |
| | • 3*Flow EZ 7 bars for all 3 phases | LU-FEZ-7000 |
| Reservoirs | • Continuous phase: ◊ 1*50mL Pcap with 50mL Falcon tube ◊ Tubing: 500 µm | P-CAP50-HP-PCK |
| | • Shell Phase: ◊ 2*15 mL Pcap with 15 mL Falcon tube ◊ Tubing: 125 µm | P-CAP15-HP-PCK |
| | • Core Phase: ◊ 2*15 mL Pcap with 15 mL Falcon tube ◊ Tubing: 125 µm | P-CAP15-HP-PCK |
| Flow meters | • Continuous phase: 1*Flow unit L | FLU-L-D |
| | • Shell Phase: 1* Flow unit M | FLU-M-D |
| | • Core Phase: 1*Flow unit M | FLU-M-D |
| Tubing and fittings | • Tubing: ◊ OD: 1/16 and 1/32 OD ◊ ID: 250 µm & 500 µm ◊ Materials: PFA • Manual valves: ◊ 3*4 way valves ◊ 2*2 way valves • Filters: ◊ 2 µm filter for continuous phase ◊ 2 µm filters for dispersed phases | N/A |

*Formulation dependent

PLATFORM S+

P.N: [O-FACS2-PTF]

FLUIDIC TECHNICAL SPECIFICATIONS

| | Range |
|------------------|---|
| Continuous Phase | • 0±2mL/min |
| Shell Phase | • 0±80µL/min (H2O) • 0±500µL/min (IPA) |
| Core Phase | • 0±80µL/min (H2O) • 0±500µL/min (IPA) |
| Droplet size | • 45-60 µm |

MECHANICAL SPECIFICATIONS

| | Description |
|------------------|---|
| Unit dimensions | • 61 x 46 x 43cm ³ (L x W x H) |
| Weight | • 15 kg without the protective hood • 22.5 kg with the protective hood |
| Wetted materials | • Platform: PEEK, PFA, PCTFE, PTFE, SS316L, GLASS • Sealing: FFKM |

OPTICAL SYSTEM SPECIFICATIONS

| Description |
|--|
| • Light source |
| • Microscope objective (10x) |
| • Specific colour camera (up to 400 fps, 1µs integration time) |
| • XYZ translation stages |

PLATFORM M

P.N: [O-FACS3-PTF]

PRODUCT DESCRIPTION

| Description | Product | Part Number |
|-----------------------------------|---|------------------|
| Double emulsion production device | RayDrop Double Emulsion 60-120-60 | O-DE-RDRPC07-EUP |
| Fluid handling system | • 1*Link module | LU-LNK-0002 |
| | • 3*Flow EZ 7 bars for all 3 phases | LU-FEZ-7000 |
| Reservoirs | • Continuous phase: ◊ 1*50mL Pcap with 50mL Falcon tube ◊ Tubing: 500 µm | P-CAP50-HP-PCK |
| | • Shell Phase: ◊ 2*15 mL Pcap with 15 mL Falcon tube ◊ Tubing: 125 µm | P-CAP15-HP-PCK |
| | • Core Phase: ◊ 2*15 mL Pcap with 15 mL Falcon tube ◊ Tubing: 125 µm | P-CAP15-HP-PCK |
| Flow meters | • Continuous phase: 1*Flow unit L | FLU-L-D |
| | • Shell Phase: 1* Flow unit M | FLU-M-D |
| | • Core Phase: 1*Flow unit M | FLU-M-D |
| Tubing and fittings | • Tubing: ◊ OD: 1/16 and 1/32 OD ◊ ID: 250 µm & 500 µm ◊ Materials: PFA • Manual valves: ◊ 3*4 way valves ◊ 2*2 way valves • Filters: ◊ 2 µm filter for continuous phase ◊ 2 µm filters for dispersed phases | N/A |

*Formulation dependent

PLATFORM M

P.N: [O-FACS3-PTF]

FLUIDIC TECHNICAL SPECIFICATIONS

| | Range |
|------------------|---|
| Continuous Phase | • 0±2mL/min |
| Shell Phase | • 0±80µL/min (H2O) • 0±500µL/min (IPA) |
| Core Phase | • 0±80µL/min (H2O) • 0±500µL/min (IPA) |
| Droplet size | • 50-60 µm |

MECHANICAL SPECIFICATIONS

| | Description |
|------------------|---|
| Unit dimensions | • 61 x 46 x 43cm ³ (L x W x H) |
| Weight | • 15 kg without the protective hood • 22.5 kg with the protective hood |
| Wetted materials | • Platform: PEEK, PFA, PCTFE, PTFE, SS316L, GLASS • Sealing: FFKM |

OPTICAL SYSTEM SPECIFICATIONS

| Description |
|--|
| • Light source |
| • Microscope objective (5x) |
| • Specific colour camera (up to 400 fps, 1µs integration time) |
| • XYZ translation stages |

PLATFORM M+

P.N: [O-FACS4-PTF]

PRODUCT DESCRIPTION

| Description | Product | Part Number |
|-----------------------------------|---|------------------|
| Double emulsion production device | RayDrop Double Emulsion 60-120-90 | O-DE-RDRPC08-EUP |
| Fluid handling system | • 1*Link module | LU-LNK-0002 |
| | • 3*Flow EZ 7 bars for all 3 phases | LU-FEZ-7000 |
| Reservoirs | • Continuous phase: ◊ 1*50mL Pcap with 50mL Falcon tube ◊ Tubing: 500 µm | P-CAP50-HP-PCK |
| | • Shell Phase: ◊ 2*15 mL Pcap with 15 mL Falcon tube ◊ Tubing: 125 µm | P-CAP15-HP-PCK |
| | • Core Phase: ◊ 2*15 mL Pcap with 15 mL Falcon tube ◊ Tubing: 125 µm | P-CAP15-HP-PCK |
| Flow meters | • Continuous phase: 1*Flow unit L | FLU-L-D |
| | • Shell Phase: 1* Flow unit M | FLU-M-D |
| | • Core Phase: 1*Flow unit M | FLU-M-D |
| Tubing and fittings | • Tubing: ◊ OD: 1/16 and 1/32 OD ◊ ID: 250 µm & 500 µm ◊ Materials: PFA • Manual valves: ◊ 3*4 way valves ◊ 2*2 way valves • Filters: ◊ 2 µm filter for continuous phase ◊ 2 µm filters for dispersed phases | N/A |

*Formulation dependent

PLATFORM M+

P.N: [O-FACS4-PTF]

FLUIDIC TECHNICAL SPECIFICATIONS

| | Range |
|------------------|---|
| Continuous Phase | • 0±2mL/min |
| Shell Phase | • 0±80µL/min (H2O) • 0±500µL/min (IPA) |
| Core Phase | • 0±80µL/min (H2O) • 0±500µL/min (IPA) |
| Droplet size | • 70-90 µm |

MECHANICAL SPECIFICATIONS

| | Description |
|------------------|---|
| Unit dimensions | • 61 x 46 x 43cm ³ (L x W x H) |
| Weight | • 15 kg without the protective hood • 22.5 kg with the protective hood |
| Wetted materials | • Platform: PEEK, PFA, PCTFE, PTFE, SS316L, GLASS • Sealing: FFKM |

OPTICAL SYSTEM SPECIFICATIONS

| Description |
|--|
| • Light source |
| • Microscope objective (5x) |
| • Specific colour camera (up to 400 fps, 1µs integration time) |
| • XYZ translation stages |

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
MAT 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 cm ³ |
| 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