

RayDrop Platform

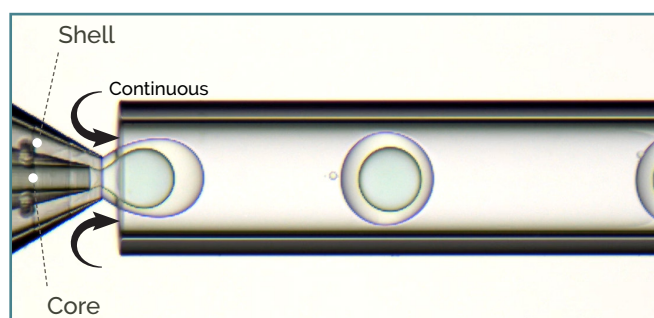
Perfect control of emulsion production



- > **Easy to use** for droplet generation (single emulsion or double emulsion)
- > **Precise control** of droplet size (30 - 400µm)
- > **Easy screening on formulation**
- > **Highly flexible:** water-in-oil and oil-in-water droplets
- > **Handling of low volume samples**

The Raydrop platform is a fast and easy screening tool to setup emulsification processes such as simple emulsions and double emulsions using Secoya's emulsification technology: the Raydrop. It includes a comprehensive flow path with pressure controllers, filters, flowmeters, and valves to ease the start-up, shut-down and cleaning of the system in between tests.

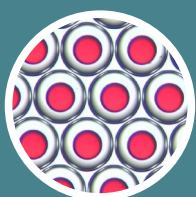
A suitable optical system guarantees the optimum visualisation of the emulsification process inside the Raydrop.



The way we produce droplets, particles and capsules relies on the use of couples of capillaries perfectly aligned in a metallic chamber. The first capillary is terminated with a 3D-printed nozzle and injects the droplet phase in the junction. The second one is the only output of the system, so it collects both phases, the droplet phase and the continuous phase filling the chamber under pressure.

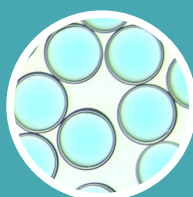
The droplets are produced by the controlled squeezing of the droplet phase by the continuous phase at the entrance of the collection capillary

> Application types



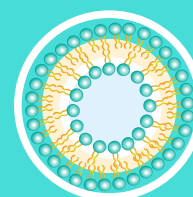
Chitosan microcapsules

Oil/water/1-octanol double emulsion



PLGA microcapsules

PLGA microcapsules in the PBS solution

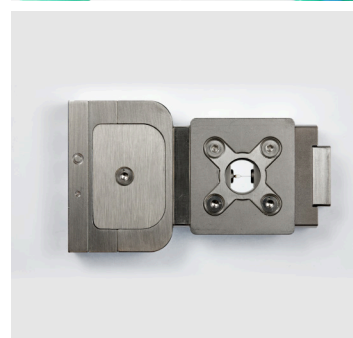
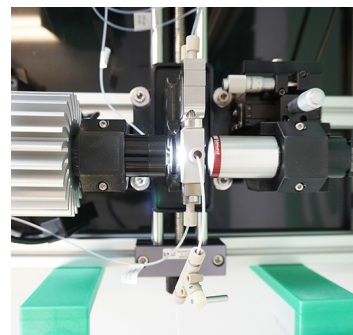


Lipid Nanoparticles

The open design of the platform allows its adaptation to the customer's needs. The Raydrop platform was developed with double emulsification process in its heart, but it is totally compatible with simple emulsification processes.

KEY FEATURES:

- Compatible with **the single and double emulsion Raydrop**
- **3 pressure controllers** (0-7 bars or 0-2 bars)
- **5 reservoirs**
- **3 flowmeters** (Continuous phase: 0-1mL/min (water); dispersed phase: 0-120 µL/min(water))
- **Complete flow path executed with 250 µm ID PFA tubing, valves and filters** (10 µm filter for continuous phase; 2 µm filters for dispersed phases)
- Complete optical system **including colour camera for precise observation and video acquisition**
- Designed for use in **fume hoods, special designed cabinets, and gloveboxes.**
- **CE certified equipment**



Description	Product
Double emulsion production device	Raydrop Double Emulsion (30-70-150)
Fluid handling system (from our partner Fluigent)	1*Link module • 3*Flow EZ 7 bar for all 3 phases
Reservoirs (from our partner Fluigent)	Continuous phase: 1*50mL Pcap with 50mL Falcon tube • Shell Phase: 2*15mL Pcap with 15mL Falcon tube • Core Phase: 2*15mL Pcap with 15mL Falcon tube
Flow meters (from our partner Fluigent)	Continuous phase: 1*Flow unit L • Shell Phase: 1* Flow unit M • Core Phase: 1*Flow unit M
Optical system	Light source : • Microscope objective • Specific colour camera (up to 400 fps, 1µs integration time) • XYZ translation stages
Tubing and filterings	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: • 10 µm filter for continuous phase • 2 µm filters for dispersed phases
Wetted materials	Platform: PEEK, PFA, PCTFE, PTFE, SS316L, GLASS • Sealing: FKM or EDPM
Unit dimensions	61 x 46 x 43cm3 (L x W x H)
Weight	4 kg without the protective hood • 21kg with the protective hood
Power supply	230 V (110 V upon request)

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