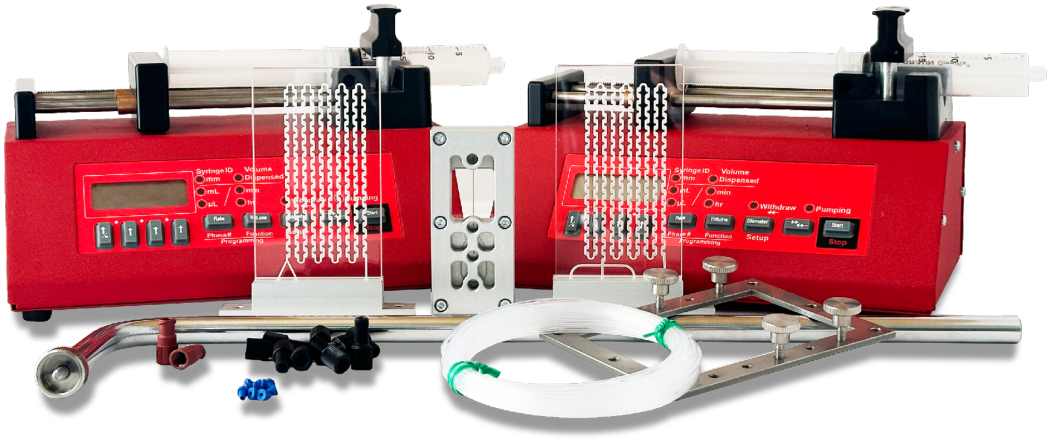
NANOPARTICLE STARTER SET



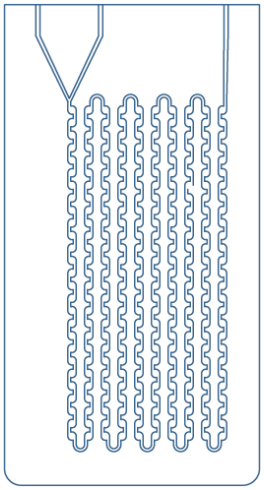
Introduction

The Nanoparticle Starter Set is intended to introduce trainees in flow chemistry and provides a deep insight into the production of polymer nanoparticles. The Starter Set was developed for professional education and laboratory synthesis. It permits the simple translation from batch process into a continuous one by using standard laboratory equipment. The different reactors cover a broad flow range from 1 L/Day up to 100 L/Day with different types of mixing structures.

Content

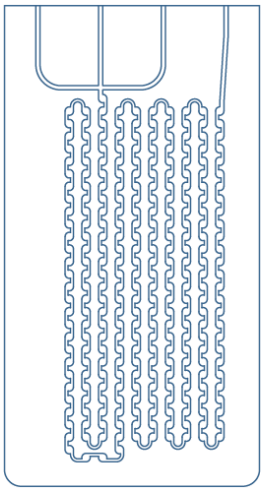
2 x LTF RS reactors incl. connection bar	1 x Herringbone Chip incl. chip holder
2 x single syringe pump	1 x Framework
10 m PTFE tube 1/16"	10 x fittings 1/16"
10 x ferrules 1/16"	2 x 20 ml plastic syringe
1 x T-Junction	1 x Manual

MICROREACTORS / FLUIDIC CHIPS



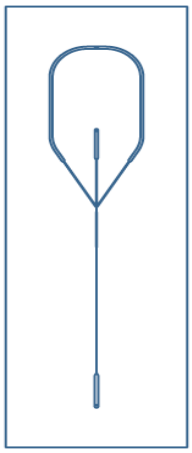
LTF RS V

Material: Boroloat33
Dimension: 115 x 60 x 6 ±0.5 mm
Inlets: 2
Volume: 1.0 ml
Mixer type: S
Cross-section: 0.7 mm
Permitted particle size: 100 µm
Flow rate @3 bar: 37 ml/min
Pressure resistance mixer: 15 bar
Inclusive connection bar 1/4" unf 28



LTF RS T

Material: Borofloat33
Dimension: 115 x 60 x 6 ±0.5 mm
Inlets: 3
Volume: 1.1 ml
Mixer type: S
Cross-section: 0.7 mm
Permitted particle size: 100 µm
Flow rate @3 bar: 33 ml/min
Pressure resistance mixer: 15 bar
Inclusive connection bar 1/4" unf 28



Herringbone Mixer

Material: Boroloat33
Dimension: 75 x 25 x 2 ± 0.3 mm
Inlets: 2
Total volume: 3.0 µl
Mixer volume: 0.47 µl
Mixer type: Herringbone
Mixer length: 0.08 – 0.11 mm
Channel width: 0.1 – 0.5 mm
Flow rate water @ 3 bar: 3.4 ml/min
Pressure resistance mixer: 15 bar
Inclusive chip holder ¼" unf 28

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SYRINGE PUMP

The Nanoparticle Starter Set contains of two syringe pumps with the following specifications:

Mechanical & Electrical

Syringe sizes:	Up to 60 cc
Number of syringes:	1
Motor type:	Step motor
Motor steps per revolution:	400
Microstepping:	1/8 to 1/2 depending on motor speed
Advance per step:	0.2126 uM to 0.8504 uM depending on motor speed
Motor to drive screw ratio:	18/28
Drive screw pitch:	20 revolutions/”
DC connector:	2.1 mm, center positive
Voltage at DC connector:	12V DC at full load
Amperage:	750 mA at full load
Power supply type:	Unregulated linear external wall adapter, country and power source specific
Power supply output rating:	12V DC @ 800 mA
Dimensions:	8 3/4” x 5 3/4” x 4 1/2” High (22.86 cm x 14.605 cm x 11.43 cm)
Weight:	3.6 lbs. (1.63 kg)
Allen Wrench	3/32 Hex

Operational

Maximum speed:	3.7742 cm/min
Minimum speed:	0.004205 cm/hr
Maximum pumping rate:	1257 ml/hr with a B-D 60 cc syringe
Minimum pumping rate:	0.73 µl/hr with a B-D 1 cc syringe
Maximum force:	35 lbs. at minimum speed, 18 lbs. at maximum speed
Syringe inside diameter range:	0.100 to 50.00 mm

REACTION MANUAL

The Nanoparticle Starter Set includes a manual for the following 3 reactions:

001 Preparation of Rigid Liposomal Formulations

002 Disulfiram encapsulated in polymer nanoparticles

003 Assembling of ultra-small Lipid-Polymer Hybrid Nanoparticles in PLGA