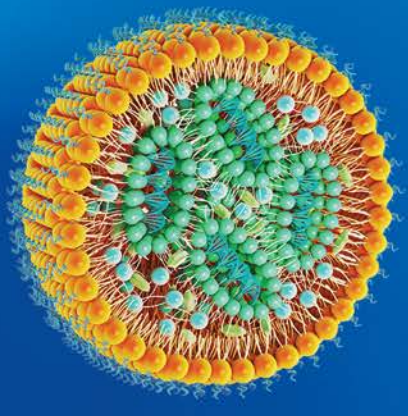
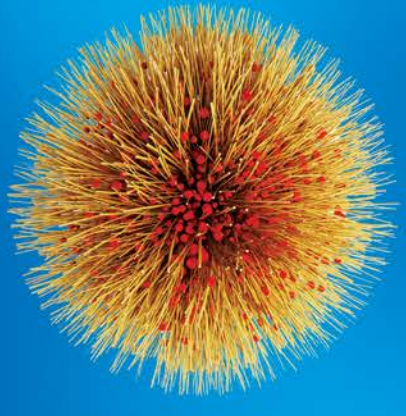
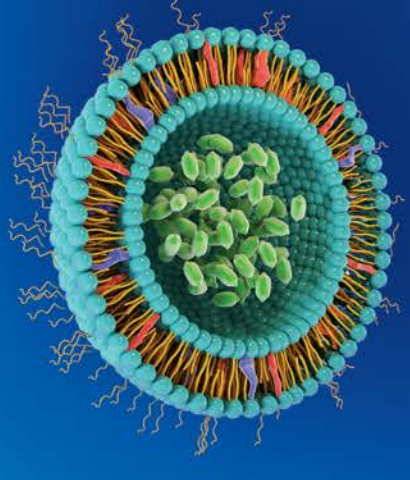


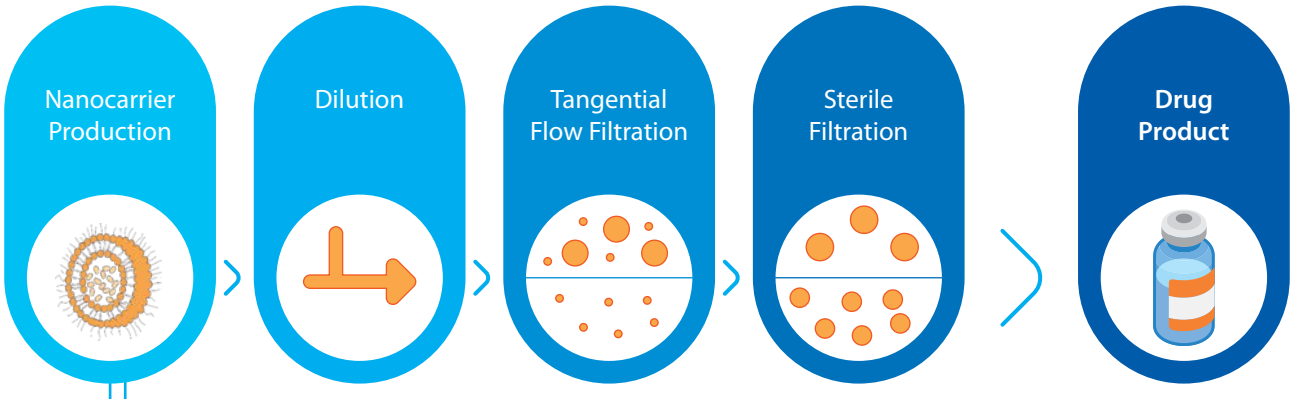




NanoSynthes

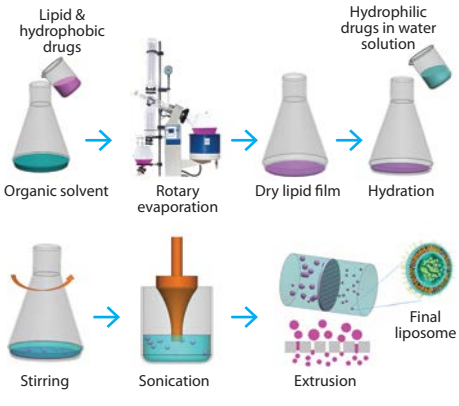
Easy production of nanocarriers

Nanocarrier production: Traditional Methods vs. Microfluidic Method

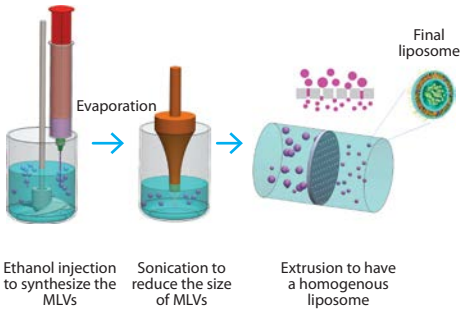


Extrusion-based methods

Thin-film evaporation method



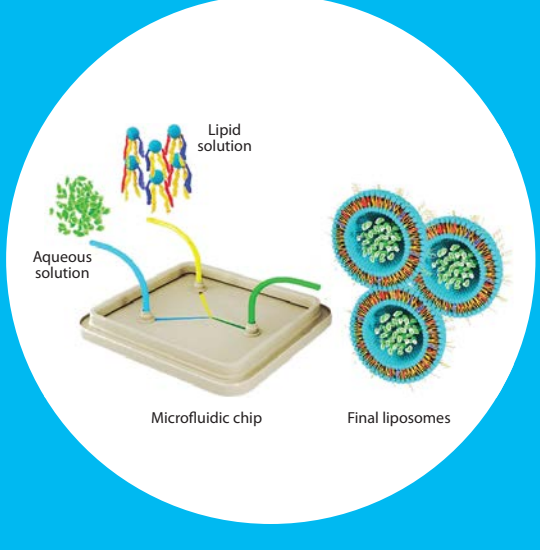
Ethanol Injection



- Multi-step process with high investment cost
- Needs particle size reduction methods
- Low reproducibility in production of particles
- Requires highly-trained operators
- Low-throughput and high cost of production
- Low controllability over size optimization

Microfluidic-based method

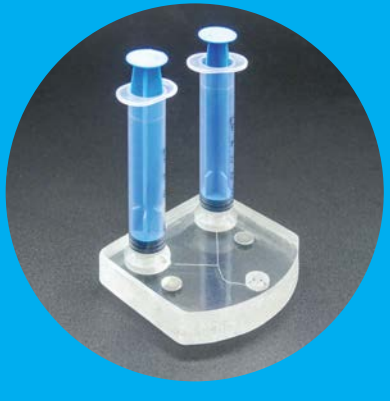
- Microfluidics allows for the production of nanocarriers in a continuous manner in one-step
- No need to employ particle size reduction methods
- High reproducibility in production of particles
- Easy modulation of particle size, PDI and drug loading



INSIGHT®

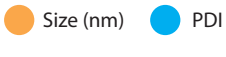
The INSIGHT Nanosynthesizer enables the production of various nanoparticles through controlled mixing of formulation reagents in a microfluidic chamber for research applications, and pilot-batch productions.

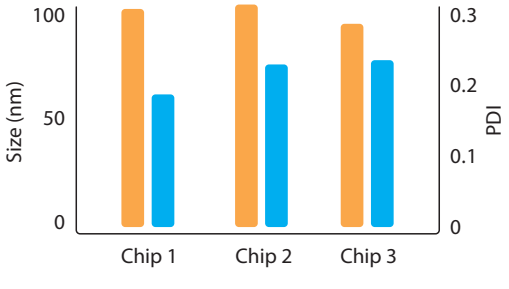
It also enables the production of formulations at elevated temperatures of up to 75° C by heating formulation syringes and the chip.



High reproducibility in production of nanocarriers

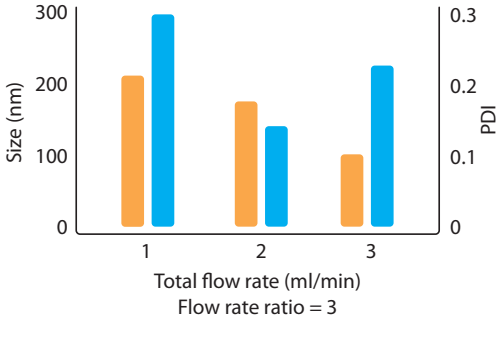
Lipid Nanoparticle (LNP)
Lipid mixture: Ionizable Lipid, Cholesterol, DSPC, PEG (DMG)
Drug: mRNA

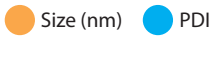


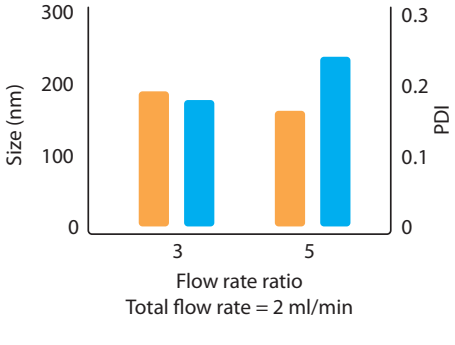


Effect of hydrodynamic conditions on the size and PDI of various nanocarriers

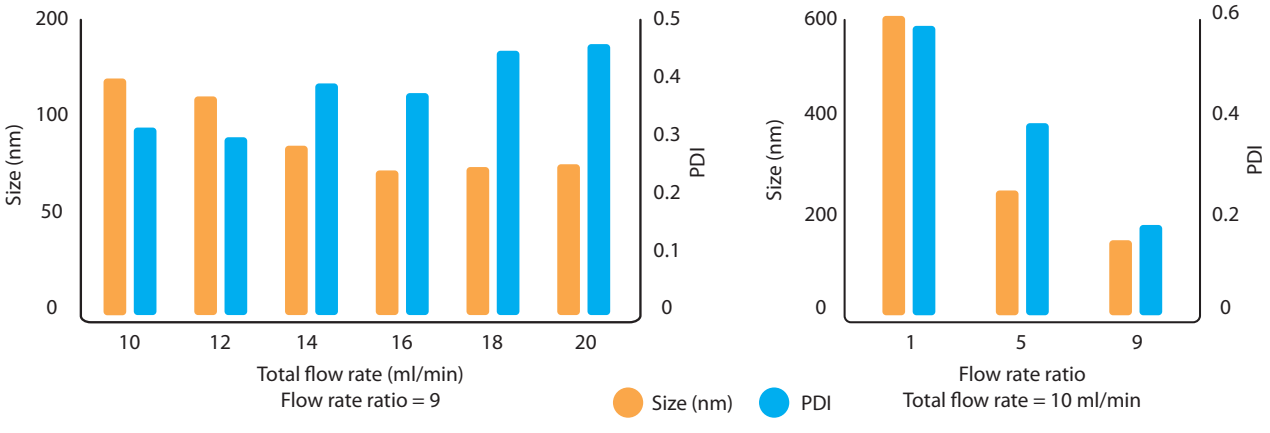
Liposome
Lipid mixture: Cholesterol, DOPC , m-PEG ,DSPE
Drug: Atorvastatin calcium (ATO)



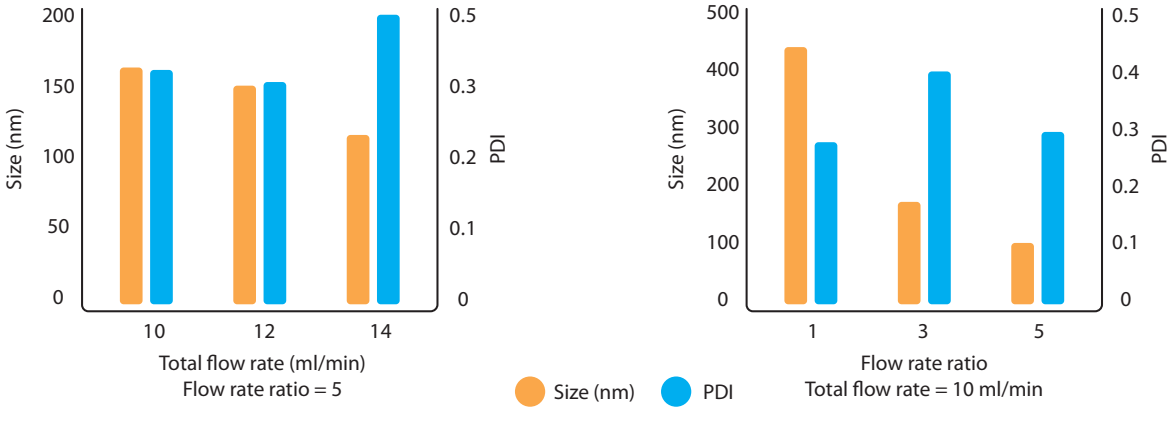




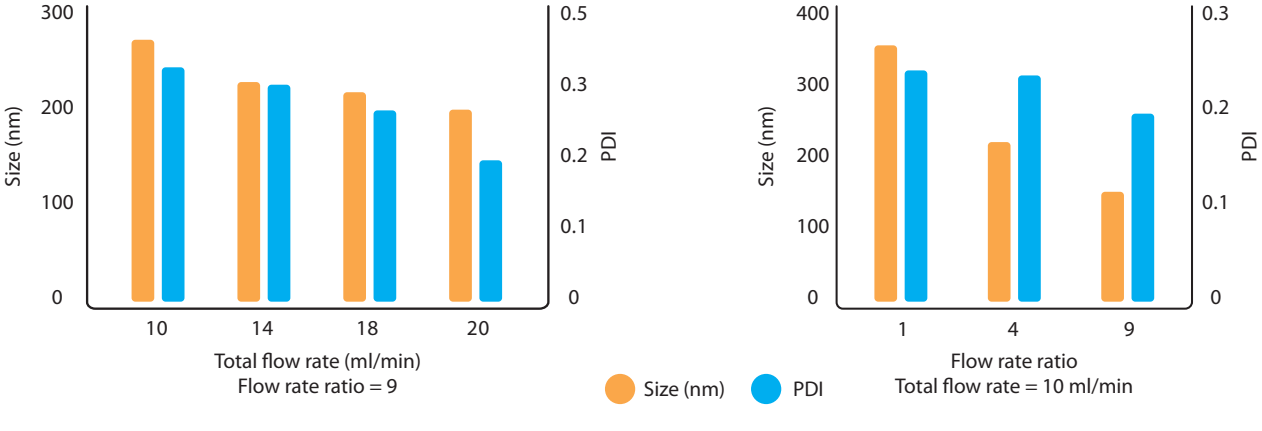
Nanostructured Lipid Carriers (NLC) (Heating system was active)
Lipid mixture: GMS, Tween 80, Span 60
Drug: Finasteride (FIN)



Niosome (Heating system was active)
Lipid mixture: Cholesterol, Tween 80, Span 60
Drug: Anti-cancer



Nano-emulsion (Heating system was active)
Lipid mixture: MCT Oil, Poloxamer, Glycerin, CKC
Drug: Alpha-lipoic acid (ALA)

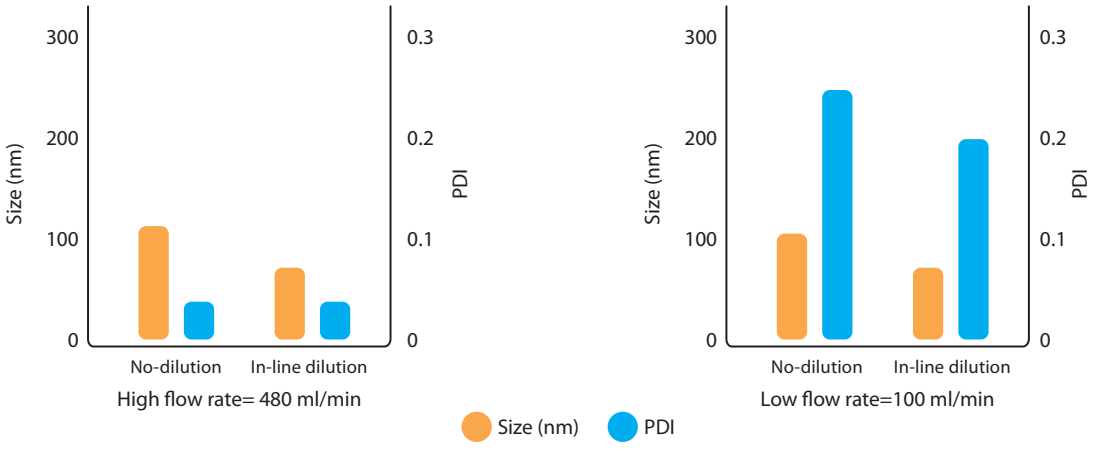


INSPIRE®

The INSPIRE Nanosynthesizer is employed for large-scale production of nanocarriers in GMP conditions. Fully automated operation of INSPIRE allows for seamless production of various nanocarriers in a continuous process with no need to use size-reduction methods. The whole device is GMP compliant.

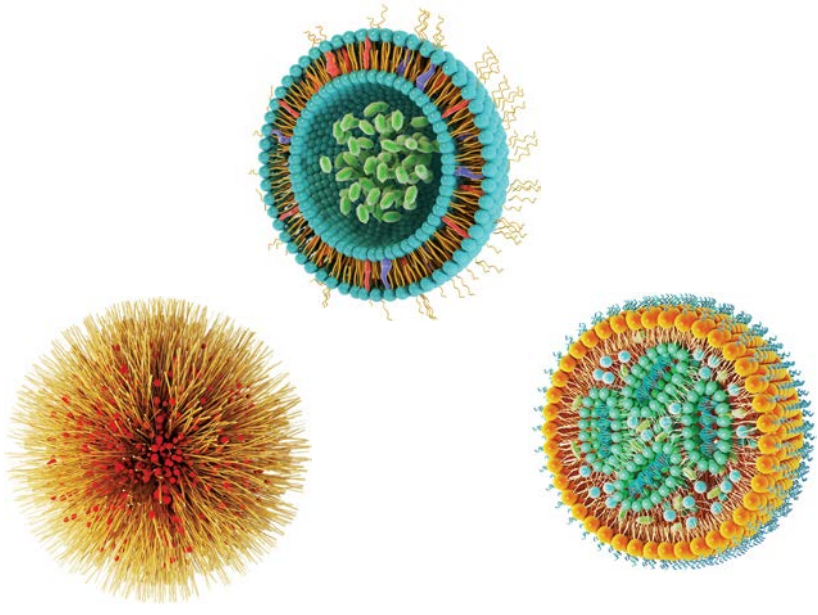
mRNA-loaded lipid nano particles (LNPs) prepared by INSPIRE

Lipid mixture: Ionizable Lipid, Cholesterol, DSPC, PEG (DMG)
Drug: (mRNA)



Capacity and volume of production could be modulated according to user requirements.

INSPIRE benefits from in-line dilution during production to control particle.



The Nanosynthes equipment enable the production of various polymeric and lipid based nanoparticles at both R&D and industrial scale.

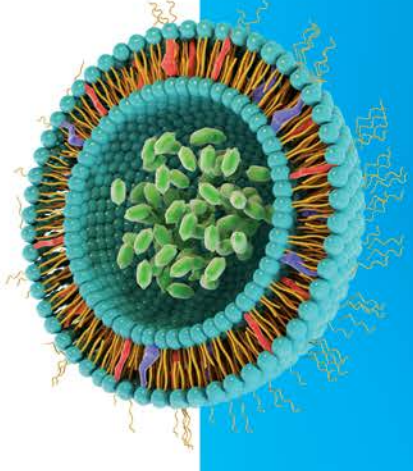
Advantages of Nanosynthes equipment for the production of nanocarriers

- High production rate with automated operation
- Production of various nanocarriers
- Elimination of batch-to-batch variations through continuous production
- High carrier loading
- Precise modulation of particle size and PDI
- Easy scale-up and high-throughput production at GMP conditions

NanoSynthes

NanoSynthes was established in 2020 with main mission of providing solutions for the production of lipid- and polymer-based drug nanocarriers. The company has successfully developed two equipment for the production of nanocarriers at laboratory scale (INSIGHT®), for R&D purposes and pre-clinical studies, and industrial scale (INSPIRE®), for clinical studies and commercialization purposes.

The operation of both equipment is based on microfluidic technology that allows for convenient modulation of particle size, PDI and encapsulation efficiency of nanocarriers.



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