

Formulation from discovery to scale-up

High Throughput LNP Formulation System

8 PARALLEL CHANNELS

Up to 8 separate formulations per run

ZERO CLEANING

All materials contained in the cartridge

>100 SAMPLES PER HOUR

On-demand sample throughput

LOW COST PER SAMPLE

From 80 μ L with no output wasted

VERY FAST

<20 seconds per run

Introducing MiNano Form™

MiNano Form turns LNP formulation into a streamlined, high-throughput workflow for screening and development. It produces up to eight formulations simultaneously with no cleaning, no waste, and from as little as 80 μ L of formulated sample. Designed to scale from a single sample to hundreds per hour, it lets drug developers generate more formulations and more data, and arrive at better candidates faster.



Simple workflow



Our microfluidic cartridges contain everything needed for liquid handling, from liquids in to samples out, making workflows simple and easy to automate. Insert a cartridge into the instrument and MiNano Form formulates up to eight samples at a time in under 20 seconds. Remove the cartridge and your samples are ready for use, with no instrument cleaning, no liquid-path changes, and no cross-contamination. Throughput scales to your needs: more than 100 samples per hour is easily achievable.



Cartridges that fit your workflows

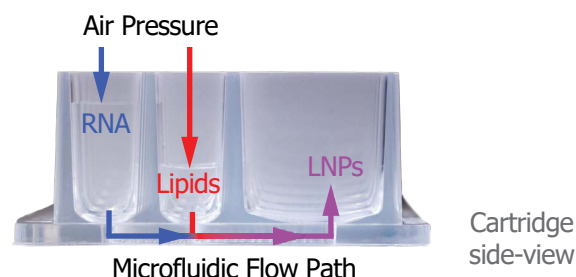
Our cartridges contain the microfluidic mixing and liquid paths independently for each channel and have negligible dead volume, so no sample is wasted priming the channels. Choose the cartridge size to suit your needs, from <100 μ L for discovery-scale screening up to 2x6 mL for more in-depth testing, all without changing the instrument or re-optimising the formulation process.

Aerofoil microfluidics



Our aerofoil mixing technology is designed for both performance and flexibility, enabling MiNano Form to reduce material usage by 4–10 $\times$ compared with leading systems while maintaining high particle quality. The same mixer architecture provides a path from small-volume discovery screening to in vivo formulation and GMP-scale production.

Precision pneumatic flow control



MiNano Form uses an active pneumatic system to drive liquid flow, with near-instantaneous pressure response and real-time flow-rate feedback control. Unlike motor-pump-based systems, ours avoids pump lag, pressure ramping, and sample waste at the start of each run. This enables accurate start/stop control across parallel channels with negligible pressure transients, supporting consistent, reliable, high-throughput nanoparticle production.

For a demo or more info contact us at info@nanoformix.com

Easy to use

No waste

High throughput

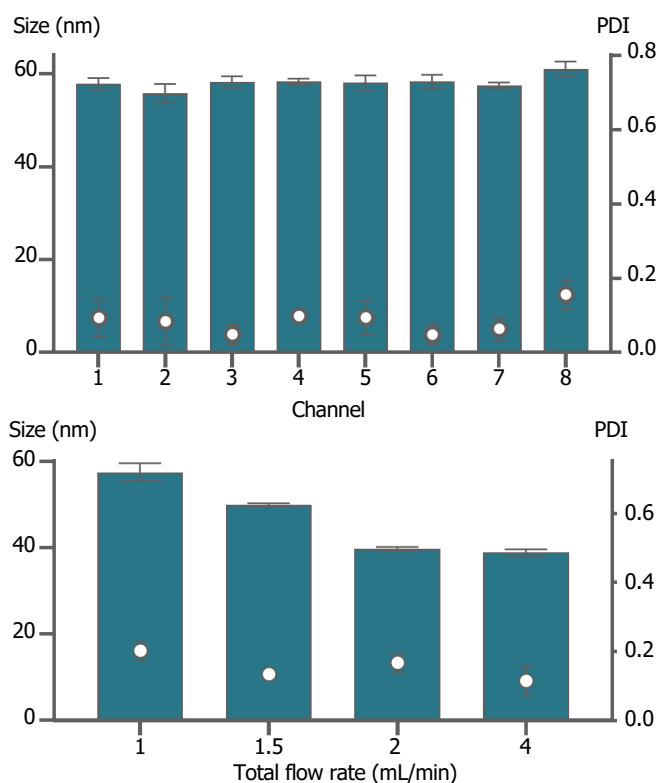
Ultra-low sample volumes

Consistency and reproducibility across the channels

NanoFormiX's technology delivers consistent nanoparticles across all channels in a cartridge, regardless of how many channels are being used. The aerofoil mixer, integrated fluid handling, and precision pneumatic feedback control maintain flow rates and flow-rate ratios for high particle quality and consistency.

Below, we compare channel-to-channel variability of particle size and PDI and the impact of flow rates for two common formulations. The data show excellent channel-to-channel reproducibility, with size CVs of 2.48–4.52% and PDIs <0.2 for both Moderna and Pfizer's formulations (not commercial products) using SM-102 and ALC-0315.

Particle size plateaus quickly at low flow rates. The high quality performance at low flow rates is due to the aerofoil mixing design, which scales well from low to high flow rates, whilst maintaining particle quality. This enables low sample volumes with no waste.



Particle size and PDI for DDAB LNP formulations across 8 channels in the same cartridge (upper) and for 1 channel at different flow rates for SM-102 formulation (lower).

Summary

MiNano Form is a cartridge-based LNP formulation platform designed for rapid, reproducible development and screening of nucleic acid formulations. The system runs eight parallel formulations per run with no cleaning, low sample input volume, and controlled microfluidic mixing for high-quality nanoparticle production.

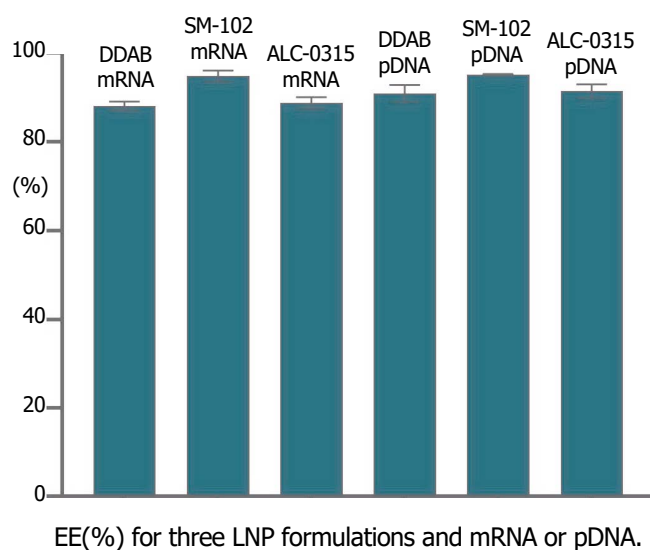
Across representative lipid systems and payloads, MiNano Form generated LNPs with controlled particle size, low PDI, high encapsulation efficiency, and strong in vitro performance, while maintaining cell viability above 90%.

Validated LNP performance across RNA and DNA payloads

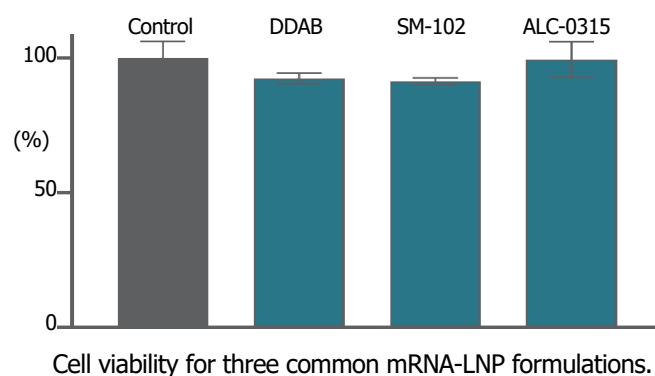
MiNano Form enables the rapid development of lipid nanoparticles with excellent physicochemical quality and biological performance across multiple payload classes.

Using DDAB, SM-102, and ALC-0315 formulations, MiNano Form produced LNPs suitable for mRNA, pDNA, and siRNA delivery, with high encapsulation efficiency, low cytotoxicity, and payload-dependent transfection or uptake performance.¹

These results demonstrate the commendable performance of our high-throughput screening system, MiNANO-form and 8-channel cartridge with aerofoil structure in synthesizing LNP with consistent quality.¹



EE(%) for three LNP formulations and mRNA or pDNA.



Cell viability for three common mRNA-LNP formulations.

For more information or to book a demo, contact us at info@nanoformix.com or visit our website - www.nanoformix.com

[1] Liu, D., Yu, M., Zhang, Y., Mathew, A., Guan, T., Yao, L., Wang, X., Wang, W. and Zhang, N., 2026. Unique Aerofoil-Structured Microfluidics for High Throughput Lipid Nanoparticle Formulation Screening and Scale-up. *Advanced Science*, 13(6), p.e11222.