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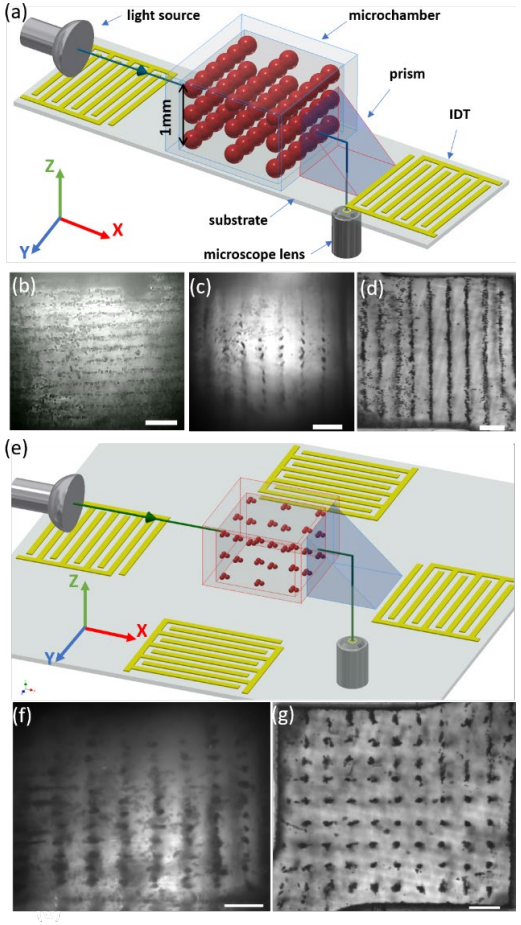
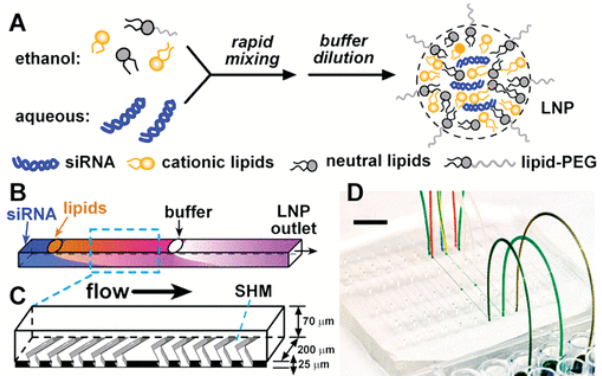
Our background:

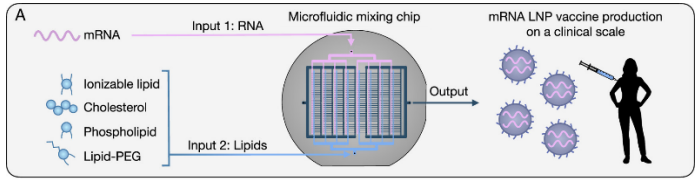
- **Surface acoustic wave-based microfluidic**
- **MEMS and microfluidic device physic, design and fabrication**



Conventional microfluid mixing **[1-2]**

- **Encapsulation efficiency ~ 80%**
- **Lab scale/low volume production**

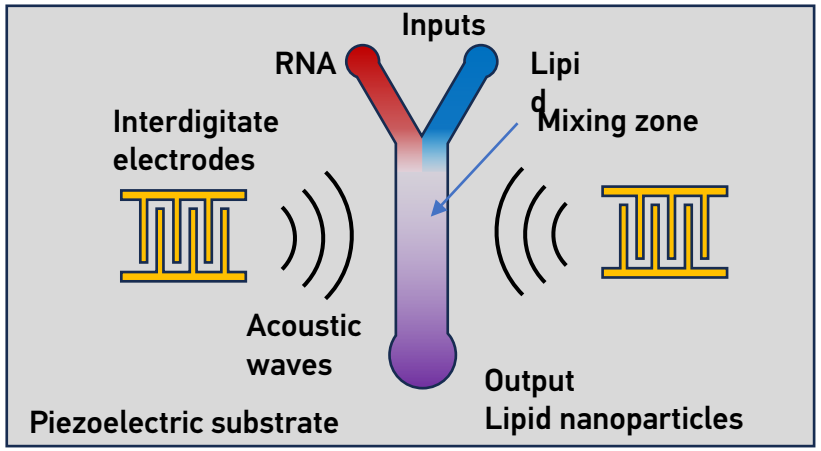




[1] D. Chen *et al.*, "Rapid Discovery of Potent siRNA-Containing Lipid Nanoparticles Enabled by Controlled Microfluidic Formulation," *Journal of the American Chemical Society,* vol. 134, no. 16, pp. 6948-6951, 2012/04/25 2012, doi: 10.1021/ja301621z.
[2] S. J. Shepherd *et al.*, "Throughput-scalable manufacturing of SARS-CoV-2 mRNA lipid nanoparticle vaccines," *Proceedings of the National Academy of Sciences,* vol. 120, no. 33, p. e2303567120, 2023, doi: doi:10.1073/pnas.2303567120.

Our approach:

- **Acoustic waves integrated microfluid mixing device**
- **Promote vortex flow inside the chamber**
- **Aim to increase volume and efficiency, better lipid nanoparticle size**



Vortex flow by surface acoustic wave