

## Robust and scalable production of emulsion droplets in a 3D-printed device

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Emulsions play an important role in various fields of industry including food, cosmetics, and pharmaceuticals. However, there is still a compelling need for a versatile platform which allows robust and scalable production of emulsion droplets. Despite the recent emergence of 3D-printing technology as a promising tool for fabricating droplet generating platform due to low cost, one-step prototyping, and facile manufacturability, the design and fabrication of a simple yet robust device for scalable production of monodispersed emulsions remains to be resolved. Herein, we report on a newly designed 3D-printed parallelized device composed of a 3D void geometry and a flow distributor for scalable production of water-in-oil (W/O) as well as oil-in-water (O/W) emulsions. This also enables continuous synthesis of functional microparticles and microgels templated from W/O and O/W emulsions, demonstrating its potential as a versatile manufacturing platform.