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**3D Shrinky-Dink Vortex Micromixer: Efficient Mixing at Low Reynolds Numbers** MICHAEL SPRAGUE, School of Natural Sciences, Univ. of California, Merced, CHI-SHUO CHEN, MAUREEN LONG, ANTHONY GRIMES, School of Engineering, Univ. of California, Merced, FRANÇOIS BLANCHETTE, School of Natural Sciences, Univ. of California, Merced, MICHELLE KHINE, School of Engineering, Univ. of California, Merced — Rapid and effective mixing of macromolecular solutions remains a persistent challenge when studying biochemical reactions. We show here that rapid and enhanced micromixing can be achieved in an easily fabricated (requiring no lithography), topologically simple 3D microvortex mixer at low Reynolds numbers. Experiments indicate dramatically improved mixing performance when compared with the traditional 2D serpentine design. Direct numerical simulation is used to examine vortex formation and to offer mechanistic understanding of our experimental data.

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