Pushing the Boundaries of High-resolution 3D Printing with Two-photon Polymerization

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In recent years, the unique capabilities of two-photon polymerization (2PP) have made it possible to create a variety of miniaturized polymer structures and microscale components suitable for biomedical applications. However, limitations in throughput, build volume, and choice of materials have greatly hindered the usefulness of this fabrication technique. By combining a highly optimized optical system with a powerful one-watt femtosecond laser and a proprietary adaptive resolution technology, UpNano have revolutionized the two-photon polymerization (2PP) 3D printing process by increasing its speed by a factor of up to 100, making batch and series production of ultra-high-resolution, mesoscale parts and structures a reality¹. We will present the cutting-edge NanoOne 3D printing technology and highlight several recent works where NanoOne has been used to extend what is currently achievable in precision manufacturing. We will feature recent work in bioprinting space whereby 2PP was used to generate microvascular structures directly on-chip².

¹Kueenburg B. et al. *Novel Patterning Technologies* **11610**, *116100G* (2021). ¹Dobos, A. et al. *Biofabrication* **13**, *015016* (2021).