

ZHENG XIONG

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121 Lafayette road, Apt 433, Syracuse, NY 13205

EDUCATION

- Ph.D. in Bioengineering (Optics/Additive Manufacturing Focus), Syracuse University (GPA: 3.8) 07/2016-Present
- M.S. in Optics, University of Chinese Academy of Sciences (GPA: 3.9) 05/2016
- B.S. in Laser Physics, Changchun University of Science and Technology (GPA: 3.5) 07/2011

PROFESSIONAL EXPERIENCE

1. Principal Investigator and CTO, 3D Microfluidics LLC 08/2019-Present

- Secured [\\$225K NSF SBIR Funding](#) on optical microfabrication of microfluidic chips
- Leading an interdisciplinary team to prototype an NUV projection stereolithography machine
- Evaluating the design options by balancing resolution, alignment, manufacturability and budget
- Hands-on system alignment/calibration, automation, troubleshooting, print optimization, material characterization

2. Research Assistant, Syracuse University 07/2016-Present

Ultrafast laser based multimode stereolithography technology

- Benchtop development of a novel stereolithography system using projection lithography and ultrafast laser micromachining to realize additive/subtractive modalities, multiscale/multimaterial microstructures (US19/41290)
- Design of the experiments to optimizing lithography process by modulating parameters such as, light intensity/uniformity, printing speed/acceleration, photoinitiator/absorber ratio, etc.
- Applied the technology for fabricating artificial tissue model, micro-optical devices, precision microfluidic chips, microscale photomask, etc. using off-the-shelf photopolymers or self-synthesized materials

3. Research Assistant, University of Chinese Academy of Sciences 05/2012-05/2016

Project: Laser scanning projection photolithography system

- Modeling and simulation in Matlab and Tracepro to solve the diffraction analysis of spatial light modulator
- Optical design of LED/laser-based illumination system
- Non sequential raytracing of the optical system in Tracepro for stray light analysis
- Image processing to compensate system imperfection including illumination non-uniformity, alignment error, etc.

TECHNICAL SKILLS

- Fabrication: additive manufacturing, laser machining, lithography, plasma etching, wet chemistry
- Metrology: AFM, SEM, FTIR, optical microscopies, refractometer, spectrometer, rheometer, tensile tester
- Software: Matlab, Zemax, Tracepro, Labview, C/C++, VB, Inventor, Solidworks, AutoCAD, COMSOL

PROFESSIONAL HIGHLIGHTS

- SPIE optics and photonics education scholarship
- Syracuse University graduate fellowship
- Entrepreneurship training through NSF and Syracuse University
- Chinese national scholarship for outstanding graduate
- Reviewer for 13 peer reviewed journals and 2 international conferences

SELECTED PUBLICATIONS

Material science

1. **Z. Xiong**, “In-Gel diffraction micro-optics by refractive index change using laser induced densification” (*under preparation*)
2. **Z. Xiong**, “Hydrogel based diffractive micro-optics using rapid digital photopatterning”, *Advanced Optical Materials* (2020)
3. P. Kuwnar, A. V.S. Jannini, **Z. Xiong**, etc, “High-resolution 3D printing of stretchable hydrogel structures using optical projection lithography”, *ACS applied material & interface* (2020)

Optical microfabrication

4. **Z. Xiong**, etc., “Femtosecond laser induced densification within cell-laden hydrogels results in cellular alignment”, *Biofabrication* (2019)
5. P. Kunwar, **Z. Xiong**, etc., “Oxygen permeable films for continuous additive, subtractive and hybrid additive-subtractive manufacturing”, *3D Printing and Additive Manufacturing* (2020)
6. Y. Zhang, J. Luo, **Z. Xiong**, etc., “User-defined microstructures array fabricated by DMD based multistep lithography with dose modulation”, *Optics Express* (2019)
7. P. Kunwar, **Z. Xiong**, etc., “Hybrid laser platform for printing 3D multiscale multi-material hydrogel structures”, *Advanced Optical Materials* (2019)

Optical Engineering

8. **Z. Xiong**, etc. “Illumination uniformity improvement in DMD based scanning photolithography system”, *Optics Express* (2018)
9. Han Q., Wang J., **Xiong Z.**, etc., “Diffraction characteristics analysis for DMD-based scene projectors in the long-wave infrared”, *Infrared and Laser Engineering* (2017)
10. **Z. Xiong**, etc., “Diffraction analysis of digital micromirror device in maskless photolithography system”, *Journal of Micro/Nanolithography, MEMS, and MOEMS* (2014)
11. H. Liu, Z. Lu, **Z. Xiong**, etc. “Exposure optical system in lithographic main scale of absolute optical encoder” *Optics and Precision Engineering* (2014)

Laser Physics

12. Xia J., Lü Y., Zhang X., Cheng W., **Xiong Z.**, etc., “All-solid-state cw Nd:KGd(WO₄)₂ self-Raman laser at 561nm by intracavity sum-frequency mixing of fundamental and first-stokes wavelengths”, *Laser Physics Letters* (2011)
13. Lü Y., Zhang X., Li S., Xia J., Cheng W. & **Xiong Z.**, “All-solid-state cw sodium D₂ resonance radiation based on intracavity frequency-doubled self-Raman laser operation in double-end diffusion-bonded Nd³⁺: LuVO₄ crystal”, *Optics Letters* (2011)
14. Lü Y., Cheng W., **Xiong Z.**, etc. “Efficient CW laser at 559nm by intracavity sum-frequency mixing in a self-Raman Nd: YVO₄ laser under direct 880nm diode laser pumping”, *Laser Physics Letters* (2011)