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1. REPORT DATE (DD-MM-YYYY) 07-09-2021	2. REPORT TYPE Final Report	3. DATES COVERED (From - To) 5-Jun-2018 - 30-Nov-2019
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4. TITLE AND SUBTITLE Final Report: Laser-Based 3D printer for thermally cured polymer devices with micron resolution	5a. CONTRACT NUMBER W911NF-18-1-0195
	5b. GRANT NUMBER
	5c. PROGRAM ELEMENT NUMBER 611103

6. AUTHORS	5d. PROJECT NUMBER
	5e. TASK NUMBER
	5f. WORK UNIT NUMBER

7. PERFORMING ORGANIZATION NAMES AND ADDRESSES Pennsylvania State University Office of Sponsored Programs 110 Technology Center Building University Park, PA 16802 -7000	8. PERFORMING ORGANIZATION REPORT NUMBER
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9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS (ES) U.S. Army Research Office P.O. Box 12211 Research Triangle Park, NC 27709-2211	10. SPONSOR/MONITOR'S ACRONYM(S) ARO
	11. SPONSOR/MONITOR'S REPORT NUMBER(S) 72130-CH-RIP.1

12. DISTRIBUTION AVAILABILITY STATEMENT Approved for public release; distribution is unlimited.
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13. SUPPLEMENTARY NOTES The views, opinions and/or findings contained in this report are those of the author(s) and should not be construed as an official Department of the Army position, policy or decision, unless so designated by other documentation.
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14. ABSTRACT
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15. SUBJECT TERMS
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16. SECURITY CLASSIFICATION OF:			17. LIMITATION OF ABSTRACT UU	15. NUMBER OF PAGES	19a. NAME OF RESPONSIBLE PERSON Benjamin Lear
a. REPORT UU	b. ABSTRACT UU	c. THIS PAGE UU			19b. TELEPHONE NUMBER 814-863-0889

**RPPR Final Report**  
as of 18-Jan-2022

Agency Code: 21XD

Proposal Number: 72130CHRIP

**Agreement Number: W911NF-18-1-0195**

**INVESTIGATOR(S):**

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Organization: **Pennsylvania State University**

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Country: USA

DUNS Number: 003403953

EIN: 246000376

**Report Date:** 29-Feb-2020

Date Received: 07-Sep-2021

**Final Report** for Period Beginning 05-Jun-2018 and Ending 30-Nov-2019

**Title:** Laser-Based 3D printer for thermally cured polymer devices with micron resolution

**Begin Performance Period:** 05-Jun-2018

**End Performance Period:** 30-Nov-2019

**Report Term:** 0-Other

Submitted By: Lauren Zarzar

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**Distribution Statement:** 1-Approved for public release; distribution is unlimited.

**STEM Degrees:**

**STEM Participants:**

**Major Goals:** The major goals of this project were the construction of an additive manufacturing printer that could leverage both pulsed and continuous laser light for both optically-induced and photothermally promoted reactions.

**Accomplishments:** We have successfully built this printer, and it now resides as a shared instrument within the chemistry building in the department of chemistry at Penn State. The printer primarily uses CW light and can work with or without a syringe to deliver material to the point of illumination.

**Training Opportunities:** The graduate students involved in the construction of this printer were trained in the design of optical instruments, as well as the assembly of the required components.

**Results Dissemination:** This design and build of this printer was not reported in publications. However, it has been used in multiple studies, and so it has been referenced in several talks.

**Honors and Awards:** Nothing to Report

**Protocol Activity Status:**

**Technology Transfer:** Nothing to Report

**PARTICIPANTS:**

**Participant Type:** PD/PI

**RPPR Final Report**  
as of 18-Jan-2022

**Participant:** Benjamin Lear  
**Person Months Worked:** 1.00  
Project Contribution:  
National Academy Member: N

**Funding Support:**

**Participant Type:** Co PD/PI  
**Participant:** Lauren Zarzar  
**Person Months Worked:** 1.00  
Project Contribution:  
National Academy Member: N

**Funding Support:**

**Participant Type:** Co PD/PI  
**Participant:** Michael Hickner  
**Person Months Worked:** 1.00  
Project Contribution:  
National Academy Member: N

**Funding Support:**

**Participant Type:** Graduate Student (research assistant)  
**Participant:** Alex Castonguay  
**Person Months Worked:** 1.00  
Project Contribution:  
National Academy Member: N

**Funding Support:**

**Partners**

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I certify that the information in the report is complete and accurate:

Signature: Benjamin Lear

Signature Date: 9/7/21 12:57PM

Nothing to report.