



AFRL-AFOSR-JP-TR-2019-0044

A Study of Microfluidic Nozzle Array for Tunable Physico-chemically
Coding of Microfibers

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Final Report

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14. ABSTRACT This project has established simulation and optimization methodologies and fabrication techniques for 3D trapezoidal-blade micromixers or similar. The fabricated micromixers will be applied for further projects, including the above-mentioned project. Through this project, PI has established good collaborations both international and domestic. Comments: After several months attempt to get the final report with all the documents, finally received everything by 10 July 2019. Furthermore, the final report is not what i was looking for but that is all PI submitted with comments that he do not have time to finish the final report due to sabbatical to another country.					
15. SUBJECT TERMS Modeling and Simulation,, 3D Printing,, Multi-Physics, Microfluidic fiber,					
16. SECURITY CLASSIFICATION OF:			17. LIMITATION OF ABSTRACT SAR	18. NUMBER OF PAGES	19a. NAME OF RESPONSIBLE PERSON KIM, TONY
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FINAL PERFORMANCE REPORT

1. Project title: *“A Study of Microfluidic Nozzle Array for Tunable Physico-chemically Coding of Microfibers”*
2. PI (name & address): *Bao Quoc Ta, PhD.*

Ton Duc Thang University, Ho Chi Minh city, Vietnam.
3. Duration: Sep. 2017 - Sep. 2018
4. Summary on performance:
 - 01 patent application submitted to USPTO.
 - 02 invited talks at two international conferences
 - Got additional funding: US\$10,000 from Ton Duc Thang University.
 - 01 application submitted to The Research Council of Norway for NOK 8M (~US\$1M). The project title is *“Carbon nanotube based lab-on-a-chip device for point-of-care detection of E.coli from real samples”*. Collaborators include: Prof. Aasmundtveit, Prof. Halvorsen, Prof. Johannessen, and Assoc. Prof. Azadmehr, from the University College of Southeast Norway (HSN). Please see the file *“NewProposal_RCN.pdf”* for a brief introduction.
5. Applied value of the project
 - This project has established simulation and optimization methodologies and fabrication techniques for 3D trapezoidal-blade micromixers or similar.
 - The fabricated micromixers will be applied for further projects, including the above-mentioned project.
 - Through this project, PI has established good collaborations both international and domestic.
6. Any publications
 - 02 Invited talks at
 - + International Conference on Applied & Engineering Physics, October 2015, Ha Noi.
Title: *“Passive Micromixers of Trapezoidal Microchannels”*
(Please find my talk's slides in the file *“BQT_HNVLKTUD2015.pdf”*)
 - + International Conference on Spectroscopy and Materials Science, Nov. 2015, Da Nang, Vietnam.
Title: *“Passive Micromixers”*
(Please find my talk's slides in the file *“BQT_ICSM2015.pdf”*)
7. Any patents applied for
Bao Quoc Ta, Hai Le The, “Device and Process for a Micromixer having Trapezoidal Zigzag Channels”, United States Patent Application, submitted Dec. 2015, updated and resubmitted Dec. 2016.
Please see the first three pages of this application - the file “USPTO_application_First03pages.pdf”
8. If additional budget or staff is required for the remaining part of the research work, please give justifications and details.

Date:
February 02nd, 2018.

Signature



Bao Quoc Ta, PhD