

Mehmet Akif Şahin, M.Sc.

Research Assistant at Control and Manipulation of Microscale Living Objects
TranslaTUM - Center for Translational Cancer Research
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EDUCATION

June 2021 -

Technical University of Munich, Munich - *PhD*

- Thesis Title: Dynamic Microfluidic Architectures: From Precision Flow Control to Programmable Soft Material Fabrication
- Supervisor: Prof. Dr. Ghulam Destgeer

August 2017 - December 2020

Middle East Technical University, Ankara - *M.Sc. in mechanical engineering*, ranked 1st

- Thesis Title: Numerical and Experimental Investigation of Acoustophoretic Microfluidic Devices
- Supervisor: Prof. Dr. Mehmet Bülent Özer

September 2012 - September 2017

TOBB Economy and Technology University, Ankara - *B.Sc.*

- Bachelor of Science in Mechanical Engineering, High Honour
- Bachelor of Science in Mathematics (Double Major), High Honour

EXPERIENCE

June 2021 -

Control and Manipulation of Microscale living Object Research Group, Technical University of Munich (TUM), Munich - *Research Assistant*

June 2017 - December 2020

TOBB ETU Dynamic Systems Laboratory, Ankara - *Research Assistant*

February 2017 - May 2017

FNSS Defence Systems, Ankara - *Intership - Test engineer*

PUBLICATIONS

Published peer-reviewed articles

1. **M.A. Sahin**, D. Stoecklein, J. Park, G. Destgeer, ActiSculpt: a software for actively sculpting fluid flow *via* acoustic streaming, **In preparation**
2. **M.A. Sahin**, D. Stoecklein, J. Park, G. Destgeer, Acoustofluidic Active Flow Sculpting

- Enables Dynamic, Reconfigurable Cross-Sectional Patterning, bioRxiv 2026.05.10.724179; doi: <https://doi.org/10.64898/2026.05.10.724179>
3. Y. Zou, **M. A. Sahin**, M. Z. U. Khan, M. U. Akhtar, G. Destgeer, 3D Hydrodynamic Flow Lithography, bioRxiv 2025.10.27.684743; doi:<https://doi.org/10.1101/2025.10.27.684743>
 4. M. Ali, W. Kim, M. S. Khan, **M. A. Sahin**, G. Destgeer, J. Park; Droplet acoustofluidics: Recent progress and challenges. *Biomicrofluidics* 1 May 2025; 19 (3): 031502. <https://doi.org/10.1063/5.0261531>
 5. H. Werner, E. TaiediNejad, **M. A. Sahin**, M. Leuthner, P. Erfle, O. Hayden, A. Dietzel, G. Destgeer, Stopping a Multilayered Co-Axial Flow in a 3D Printed Microchannel with Cascaded Nozzles. *Adv. Mater. Technol.* 2025, 10, 2500203. <https://doi.org/10.1002/admt.202500203>
 6. X. Song, S. Udani, M. Ouyang, **M. A. Sahin**, D. Di Carlo, G. Destgeer, Tunable Picoliter-Scale Dropicle Formation Using Amphiphilic Microparticles with Patterned Hydrophilic Patches. *Adv. Sci.* 2025, 12, 2411014. <https://doi.org/10.1002/advs.202411014>
 7. J. Park, B. Cha, F. G. Almus, **M. A. Sahin**, H. Kang, Y. Kang, G. Destgeer, J. Park, Acoustic Waves Coupling with Polydimethylsiloxane in Reconfigurable Acoustofluidic Platform. *Adv. Sci.* 2024, 11, 2407293. <https://doi.org/10.1002/advs.202407293>
 8. M. U. Akhtar, **M. A. Sahin**, H. Werner, G. Destgeer, Fabrication of Size-Coded Amphiphilic Particles with a Configurable 3D-Printed Microfluidic Device for the Formation of Particle-Templated Droplets. *Adv. Mater. Technol.* 2024, 9, 2301967. <https://doi.org/10.1002/admt.202301967>
 9. M. A. Sahin, M. Shehzad, G. Destgeer, Stopping Microfluidic Flow. *Small* 2024, 2307956. <https://doi.org/10.1002/smll.202307956>
 10. **Sahin MA**, van den Eijnden L, Bhiri C and Destgeer G (2023) Deep learning based recognition of shape-coded microparticles. *Front. Lab. Chip. Technol.* 2:1248265. doi: 10.3389/frlct.2023.1248265
 11. Açıkgöz HN, Karaman A, **Sahin MA**, et al. Assessment of silicon, glass, FR4, PDMS and PMMA as a chip material for acoustic particle/cell manipulation in microfluidics. *Ultrasonics*. 2023;129:106911. doi:<https://doi.org/10.1016/j.ultras.2022.106911>
 12. **Sahin MA**, Werner H, Udani S, Di Carlo D, Destgeer G. Flow lithography for structured microparticles: fundamentals, methods and applications. *Lab Chip*. 2022;22(21):4007-4042. doi:10.1039/d2lc00421f
 13. Khan MS, **Sahin MA**, Destgeer G, Park J. Residue-free acoustofluidic manipulation of microparticles via removal of microchannel anechoic corner. *Ultrason Sonochem*. 2022;89. doi:10.1016/j.ultsonch.2022.106161
 14. **Sahin MA**, Çetin B, Özer MB. Investigation of effect of design and operating parameters on acoustophoretic particle separation via 3D device-level simulations. *Microfluid Nanofluidics*. 2020;24(1). doi:10.1007/s10404-019-2311-1

Books and book chapters

1. **Sahin, M.A.**, Ali, M., Park, J. and Destgeer, G. (2023). Fundamentals of Acoustic Wave Generation and Propagation. In *Acoustic Technologies in Biology and Medicine* (eds A. Ozcelik, R. Becker and T.J. Huang). <https://doi.org/10.1002/9783527841325.ch1>

Patents

1. G. Destgeer, H. Werner, **M. A. Sahin**, A. Dietzel, E. T. Nejad, P. Erfle, “Flow Sculpting Using 3D Structured Nozzles and Stop Flow Lithography for Multi-material Particle Fabrication”, European Patent Application No. 23 182 271.9, (2023).
2. G. Destgeer, **M. A. Sahin**, “Active flow sculpting method” (US20260092612A1)
3. G. Destgeer, Y. Zou, **M. A. Sahin**, “Parallel-flow provider device and method of producing the same” (pending)

International conferences

1. Oral - **M.A. Sahin**, D. Stoeklein, J. Park, G. Destgeer, Active Flow Sculpting, Adelaide, Australia, November 2-6, 2025. [MicroTAS 2025](#)
2. Oral - **M.A. Sahin**, D. Stoeklein, J. Park, G. Destgeer, ActiSculpt: Active Sculpting of Multilayered flow for Next Generation 3D Printing Nozzles, San Sebastian, Spain, October 6-10, 2025. [3D Advanced Manufacturing](#)
3. Oral - **M.A. Sahin**, D. Stoeklein, J. Park, G. Destgeer, ActiSculpt: Active Sculpting of Multilayered flow for Next Generation 3D Printing Nozzles, Warsaw, Poland, September 14-17, 2025. [Biofabrication 2025](#)
4. Oral - **M.A. Sahin**, D. Stoeklein, J. Park, G. Destgeer, Active Flow Sculpting, Dresden, Germany, August 20-22, 2025. [Acoustofluidics 2025](#)
5. Oral - **M.A. Sahin**, G. Destgeer, ActiSculpt: Active Sculpting of Multilayered flow for Next Generation 3D Printing Nozzles, Lucca, Italy, June 1-6, 2025. [GRS-Microfluidics](#)
6. Poster - **M.A. Sahin**, G. Destgeer, ActiSculpt: Active Sculpting of Multilayered flow for Next Generation 3D Printing Nozzles, Lucca, Italy, June 1-6, 2025. [GRC-Microfluidics](#)
7. E. Keçecioglu, E. Sinici, **M. A. Şahin**, G. Destgeer, B. Çetin, M. B. Özer, Evaluation of the Performance of an Integrated BAW-SAW Microfluidic Separation Platform, Dresden, Germany, August 20-22, 2025. [Acoustofluidics 2025](#)
8. Poster - M. Amjad, S. Gao, M. U. Akhtar, **M. A. Sahin**, Y. Yan, X. Ma, G. Destgeer, D. Wen, Design and Performance of a Tesla Valve in Microfluidic Applications, Adelaide, Australia, November 2-6, 2025. [MicroTAS 2025](#)
9. Poster - Y. Yang, M. U. Akhtar, **M.A. Sahin**, G. Destgeer, Lab on Capillary Towards Instrument-free Immunoassay, Montreux, Switzerland, October 19-22, 2025 [NanoBioTech Montreux 2025](#)
10. Poster - Y. Yang, M. U. Akhtar, **M.A. Sahin**, G. Destgeer, Lab on Capillary Towards Instrument-free Immunoassay, Adelaide, Australia, November 2-6, 2025. [MicroTAS 2025](#)
11. Poster - M. U. Akhtar, Y. Yang, Y. Zou, **M. A. Sahin**, G. Destgeer, 3D Printing of Amphiphilic Particles for Multiplex Amplified Immunoassay, San Sebastián, Spain, October 6-10, 2025. [3D Advanced Manufacturing](#)
12. Poster - **M.A. Sahin**, G. Destgeer, ActiSculpt: Active Sculpting of Multilayered flow for Next Generation 3D Printing Nozzles, Montreal, Canada, 2024. [MicroTAS2024](#)
13. Poster - **M. A. Sahin**, M. U. Akhtar, and G. Destgeer, "Stopping inertial flow within a microfluidic channel", MicroTAS2023, Katowice, Poland, October 15-19, 2023. [MicroTAS 2023](#)
14. Poster - M. U. Akhtar, **M. A. Sahin**, H. Werner, and G. Destgeer, "Length-coded amphiphilic particles for the encapsulation of a wide range of droplet volumes", MicroTAS2023, Katowice, Poland, October 15-19, 2023. [MicroTAS 2023](#)
15. Poster - **Sahin M A.**, Akkaya M., Collu O., Tascioglu Y., Durlu N., Ozer M. B. (2020). 'Numerical simulation of indirect ultrasonic molding process', 17th International Conference on Aluminium Alloys, Grenoble, France, 25-29 October (Online)
16. Poster - Akkaya M., **Sahin M A.**, Collu O., Tascioglu Y., Durlu N., Ozer M. B. (2020). 'A Study On indirect Ultrasonic Treatment of Al-Si Alloy', 17th International Conference on Aluminium Alloys, Grenoble, France, 25-29 October (Online)
17. Oral - **Sahin M A.**, Collu O., Tascioglu Y., Durlu N., Aradag S., Ozer M. B. (2019). 'Modeling Piezoelectric Actuators in Ultrasonic Excitation Molds', 3rd International Conference on Mechatronic Systems and Control Engineering (ICMSCE 2019), Nice, France, 26-28 February

AWARDS

- The Best Oral Presentation Award in GRS - Microfluidics | 2025
- The Best Oral Presentation Award in ICMSCE | 2019
- Top Graduate (Highest GPA) Awarded for academic excellence with the highest cumulative GPA in the Mechanical Engineering Master Program | 2019
- TOBB Economy and Technology University Full Scholarship | 2012

TEACHING COURSES

- Advanced microfluidics simulation (AMFS) (practical course) - 100%
- Flow lithography (practical course) - 25%
- Blood gas analysis (practical course) - 10%
- Surface acoustic wave for biomedical application (practical course) - 10%

Involved FUNDED PROJECTS

1. DFG - 567108437 - Acoustofluidics-Assisted Additive Manufacturing of Functionalized Materials for Biomedical Applications - 397,800€
2. TUBITAK 1001- 'Understanding the Factors which Effect the Performance of Acoustophoretic Systems and Increasing the Working Flow Rates'
3. TUBITAK 1003- 'Improvement of The Properties of High-Performance Aluminum and Magnesium Metal Alloys Using Ultrasonic Casting Processes'
4. TUBITAK 1003- 'Development of a lab-on-a-chip platform for determination of bacterial load from patients with bloodstream infection'

SUPERVISED STUDENTS

1. Linus Eing - Bachelor thesis
Title: Time Synchronous G-code Integration to Active Flow Sculpting Based Fiber Fabrication
2. Khadija Lichiheb - Bachelor thesis
Title: Python-Based Control Architecture for 3D Printer Integration of an Acoustofluidic Lithography Platform
3. Anna Cernina - Master thesis
Title: Advancing Active Flow Sculpting: Signal Monitoring and Setup Miniaturization in ActiSculpt
4. Can Boztepe - Bachelor thesis
Title: Multi-modal Active Sculpting Microfluidic Flow by Surface Acoustic Waves
5. Cansu Kılıç - Master thesis
Title: Benchmarking the flow lithography configuration
6. Leander van den Eijnden - Master thesis
Title: A Multimodal, Low-Cost, AI-Assisted Portable Reader to Analyze Shape-Coded Particles for Multiplexed Diagnostic Assays
7. Yümer Veysel Yıllale - Bachelor thesis
Title: Multiplexed actuation of interdigital transducers for acoustofluidic applications
8. Cyrine Bhiri - Master thesis
Title: Neural Network based recognition and analysis of shape coded particles for multiplex bioassays
9. Muhammed Shehzad - Master thesis
Title: Microparticles fabrication by using open- and closed-circuit stop flow lithography techniques
10. Korel Günar - Master thesis
Title: Microfluidic Platform for Enabling Cell-Cell Interactions

11. Feriel Fendri - Internship
Title: Automate Flow Control in a Microfluidic System for Stop Flow Lithography Process & Cell-Trap design
12. Ahmet Eren Şahin - Erasmus+ internship
Title: 3D microfluidics: Designing, manufacturing and experimentation