

Exponent®
Engineering & Scientific Consulting

Hani Gomez, Ph.D.

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Professional Profile

Dr. Gomez is trained in electrical engineering with more than a decade of experience in microelectronic systems and technologies. She has a wide range of interdisciplinary expertise that includes sensors, circuits, micro electromechanical systems (MEMS), cleanroom fabrication processes, biomedical and microfluidic devices, IoT systems, and micro/nano scale system design, prototyping and testing.

Dr. Gomez has extensive experience designing, prototyping and testing micro systems for IoT, biomedical, and robotic applications. To design such systems, she has worked with various numerical and simulation tools such as Matlab, Coventorware, Fusion360, kLayout, etc. For fabrication and prototyping, Dr. Gomez developed her expertise in micro/nano scale fabrication techniques working in class 100/1000 cleanrooms, including plasma etching, photolithography, and metal deposition (evaporation). Finally, Dr. Gomez has worked with various characterization techniques that range from atomic force microscopes (AFMs) and scanning electron microscopes (SEMs) to benchtop electrical and mechanical characterization tools such as probe stations.

Prior to joining Exponent, Dr. Gomez worked as a postdoctoral researcher at the University of California, Berkeley, where she led the design, fabrication and development of a high-mass electrostatically levitated MEMS device for accelerometer and gyroscope applications. Before the postdoctoral appointment, she led various interdisciplinary projects as a Senior MEMS Engineer working at Mekonos, Inc., and contributed to the development of their cell-therapy platform by designing and integrating silicon MEMS devices with microfluidic systems and larger scale electronics.

Dr. Gomez's contributions to MEMS, IoT, and micro robotics include developing a novel micro assembly approach that allowed for the seamless integration of MEMS and integrated circuit devices. As a graduate student at the University of California, Berkeley, where she earned her Ph.D., Dr. Gomez designed, fabricated, and characterized various complex micro systems that integrated silicon capacitive and strain sensors, silicon micro actuators, integrated circuits, and control architectures.

Academic Credentials & Professional Honors

Ph.D., Electrical Engineering & Computer Science, University of California, Berkeley, 2020

B.S., Electrical Engineering, University of South Carolina, 2014

NSF Graduate Research Fellow, National Science Foundation, 2015

Chancellor's Fellow, University of California, Berkeley, 2015

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Academic Appointments

Teaching Assistant, Electrical Engineering & Computer Science, UC Berkeley, 2016-2017

Teaching Assistant, Electrical Engineering, University of South Carolina, Columbia, 2013-2015

Prior Experience

Postdoctoral Researcher, University of California, Berkeley, 2024

Senior MEMS Engineer, Mekonos, Inc. 2022-2024

Postdoctoral Researcher, University of California, Berkeley, 2021-2022

Graduate Student Researcher, University of California, Berkeley, 2015-2020

Automation Engineering Intern, The Climate Corporation, 2017

Publications

"First Jumps of a Silicon Microrobot with an Energy Storing Substrate Spring," Craig B Schindler, Hani C Gomez, Kristofer SJ Pister. In: 2021 21st International Conference on Solid-State Sensors, Actuators and Microsystems (Transducers), pp. 349-352.

"Robust electrostatic inchworm motors for macroscopic manipulation and movement," Daniel Teal, Hani C Gomez, Craig B Schindler, Kristofer SJ Pister. In: 2021 21st International Conference on Solid-State Sensors, Actuators and Microsystems (Transducers), pp. 635-638.

"Small autonomous robot actuator (sara): A solar-powered wireless mems gripper," Alex Moreno, Austin Patel, Daniel Teal, Hani C Gomez, Andrew Fearing, Jan S Rentmeister, Jason Stauth, Kristofer Pister. In: 2021 IEEE International Conference on Robotics and Automation (ICRA), pp. 7227-7233

"15 Millinewton Force, 1 Millimeter Displacement, Low-Power MEMS Gripper," Craig B. Schindler, Hani C. Gomez, Dillon Acker-James, Daniel Teal, Wei Li, and Kristofer S.J. Pister. In: 2020 IEEE 33rd International Conference on Micro Electro Mechanical Systems (MEMS). IEEE. 2020, pp. 485-488

"Single-chip micro-mote for microrobotic platforms." Alex Moreno, Filip Maksimovic, Lydia Lee, Brian Kilberg, Craig Schindler, Hani C. Gomez, Daniel Teal et al. In: Government Microcircuit Applications & Critical Technology Conference, GOMACTech, 2020.

"Zero Insertion Force MEMS Socket: 3D Multi-chip Assembly for Microrobotics," Hani C. Gomez, Craig B. Schindler, Joseph T. Greenspun, Kristofer S. J. Pister. In: TRANSDUCERS 2019, Berlin, Germany.

"A Jumping Silicon Microrobot with Electrostatic Inchworm Motors and Energy Storing Substrate Springs," Craig B. Schindler, Joseph T. Greenspun, Hani C. Gomez, Kristofer S. J. Pister. In: TRANSDUCERS 2019, Berlin, Germany.

"MEMS airfoil with integrated inchworm motor and force sensor," Brian G. Kilberg, Joseph T. Greenspun, Daniel S. Contreras, Hani C. Gomez, Eric Liu, Kristofer S. J. Pister, Hilton Head Workshop 2018, Hilton Head, South Carolina.

"MEMS airfoil with integrated inchworm motor and force sensor," Brian G. Kilberg, Joseph T. Greenspun, Daniel S. Contreras, Hani C. Gomez, Eric Liu, Kristofer S. J. Pister, Hilton Head Workshop 2018, Hilton Head, South Carolina.

“Influence of Hydrogen etching on Growth Kinetics of Multilayer Epitaxial Graphene on non-polar 6H-SiC substrates,” Shamaita S. Shetu, Tawhid A. Rana, Hani C. Gomez, Tangali S. Sudarshan and M. V . Chandrashekhar; Electrical Engineering, University of South Carolina, Columbia, South Carolina.

Presentations

“Justicia Social: Un Enfoque Desde la Tecnología”, Hani C. Gomez; NeuroTechUCB, Universidad Católica Boliviana, 2022.

"MEMS Socket: A Solution for 3D Multi-Chip Assembly”, Hani C. Gomez, Microtech Innovation Summit 2019

“Relationship between electrically and chemically active defects in Graphene/Semiconductor (Silicon) Schottky diodes and its role in the advancement of graphene-based gas sensing technology”, Hani C. Gomez; Electrical Engineering, University of South Carolina SCAMP Research Symposium, Columbia, South Carolina.