

Parisa Pour Shahid Saeed Abadi

CONTACT INFORMATION	Department of Mechanical Engineering-Engineering Mechanics 1022 R. L. Smith Building Michigan Technological University Houghton, MI 49931	<i>Phone:</i> (906) 487-1735 <i>E-mail:</i> pabadi@mtu.edu <i>Website:</i> https://abadi.me.mtu.edu
EDUCATION	Postdoc Medicine Harvard Medical School, Brigham and Women's Hospital, Boston, MA Advisors: Profs. Ali Khademhosseini & Omid Farokhzad	July 2015 – June 2017
	Ph.D. Mechanical Engineering Georgia Institute of Technology, Atlanta, GA Advisors: Profs. Samuel Graham & Baratunde A. Cola Dissertation Committee: Profs. Satish Kumar, Hamid Garmestani, and Ting Zhu	July 2009 – May 2013
	M.S. Mechanical Engineering State University of New York at Buffalo, Buffalo, NY Advisor: Prof. Deborah D. L. Chung	January 2008 – May 2009
	B.S. Aerospace Engineering Sharif University of Technology, Tehran, Iran	September 2002 – July 2006
EMPLOYMENT	Assistant Professor Department of Mechanical Engineering-Engineering Mechanics & Affiliated Assistant Professor Department of Biomedical Engineering Department of Materials Science and Engineering Michigan Technological University, Houghton, MI	July 2017 – present May 2018 – present Aug 2018 – present
	Postdoctoral Research Fellow Brigham and Women's Hospital Harvard Medical School, Boston, MA	July 2015 – June 2017
	Visiting Assistant Professor Department of Mechanical Engineering Stevens Institute of Technology, Hoboken, NJ	August 2013 – August 2014
	Graduate Research Assistant Woodruff School of Mechanical Engineering Georgia Institute of Technology, Atlanta, GA	August 2009 – August 2013
	Graduate Teaching Assistant Department of Mechanical Engineering University at Buffalo, Buffalo, NY	January 2009 – May 2009
AWARDS & HONORS	Research Excellence Fund Seed Grant, Michigan Tech Scientist Development Grant, American Heart Association Postdoctoral Research Fellowship, National Institute of Health T32 Program, Organ Design and Engineering Training Program Microgrant, Brigham Research Institute and Center for Faculty Development and Diversity's Office for Research Careers	2021 2017 2016 2016

Postdoctoral Research Fellowship, American Association of University Women	2015
Best Poster Award Nominee, Materials Research Society Spring Meeting	2013
Presentation Award Finalist, Society of Engineering Science 49th ATM	2012
Outstanding Poster Award, Georgia Tech Research and Innovation Conference	2011 & 2012
Elected to Who's Who Among Students in American Universities and Colleges	2011
National Science Foundation Summer Institute Fellowship	2010
Best Student Paper Award, IMAPS Workshop on Thermal Management	2008

GRANTS

Additive Manufacturing of Functional Nanocomposites
Michigan Tech VPR Research Excellence Fund Seed Grant
 PI: P. P. S. S. Abadi, 2021 – 2022
 Award Amount: \$15,500 + \$4,000 matching fund

3D Printed Nano-bioactuators and Their Application in Navigation of Endovascular Catheters
American Heart Association Scientist Development Grant
 PI: P. P. S. S. Abadi, 2017 – 2021
 Award Amount: \$231,000 + \$170,000 MTU matching fund

MRI: Acquisition of Nanoscribe Photonic Professional GT2 3D Lithography System
National Science Foundation
 co-PI: P. P. S. S. Abadi, 2020 – 2021
 Award Amount: \$396,632 + \$132,640 MTU matching fund

PHF-REF-IE: Acquisition of a Flow Cytometer for Research Applications in Chemistry, Biochemistry, and Engineering
Michigan Technological University VPR
 co-I: P. P. S. S. Abadi, 2020
 Award Amount: \$43,000 + \$57,000 matching fund

Microgrant:
Brigham Research Institute and Center for Faculty Development and Diversity's Office for Research Careers
 PIs: P. P. S. S. Abadi and S. R. Shin, 2016
 Award Amount: \$2,500

Bioinspired Multifunctional Materials Based on Carbon Nanotubes
American Association of University Women Postdoctoral Fellowship
 PI: P. P. S. S. Abadi, 2015 – 2016
 Award Amount: \$35,000 + \$5,000 Harvard matching fund

UNIVERSITY &
 PROFESSIONAL
 SERVICE

Upper Peninsula Medical Conference 2023 planning committee member	2022-present
Panel reviewer, American Association of University Women fellowships	2021-present
Evaluation committee member, Health Research Institute, Michigan Tech	2021-present
Topical advisory board member, Bioengineering (MDPI)	2021-present
ADVANCE internal evaluation and advisory board (IEAB) member, Michigan Tech	2020-present
Curriculum committee member, ME-EM, Michigan Tech	2019-present
Review Editor, Editorial Board of Nanobiotechnology, Frontiers in Bioengineering and Biotechnology, Frontiers in Materials and Frontiers in Molecular Biosciences	2019 – present
Guest Editor, Special Issue "Syntheses and Biomedical Applications of Functional Polymers", International Journal of Polymer Science	2019, 2021
Conference session chair, 3D printing and bioprinting session, MRS Spring Meeting	2021
Faculty search committee	2020-2021
Panel reviewer, NSF	2020, 2021

Conference session chair and abstract reviewer, BMES Annual Meeting	2019
Proposal Reviewer for Austrian Science Fund, Lise Meitner Program	2018
Book Proposal Reviewer for CRC Press	2018
Graduate Seminar Committee Member, Michigan Tech	2017 – 2018
Review committee member for undergraduate events:	
Michigan Tech Undergraduate Research Symposium	2018
Stevens Institute Senior Design Course Projects	2013 – 2014
Georgia Tech President’s Undergraduate Research Award (PURA)	2011
Georgia Tech 6 th Undergraduate Research Spring Symposium	2011
Co-chair, Applied Mechanics in MEMS and NEMS, ASME IMECE	2014
Symposium assistant, Materials Research Society Fall Meeting, Boston, MA	2011
Staff member, Woman’s Leadership Conference, Georgia Tech, Atlanta, GA	2009
Reviewer for:	
Nanoscale, Applied Physics Letters, Biomedical Microdevices, Journal of the Mechanical Behavior of Biomedical Materials, ACS Biomaterials Science and Engineering, Micromachines (MDPI), Materials, 3Biotech, Simulation, Journal of Micromechanics and Microengineering, Journal of Applied Physics, Journal of Physical Chemistry, International Journal of Thermal Sciences, Nanoscience and Nanotechnology Letters, Advances in Polymer Technology	

PUBLICATIONS

Book Chapters

(Advisees’ names are underlined)

22. High-Performance Supercapacitors Based on 1-D Polymeric Nanocomposites M. Kasraie, T. Zheng, X. Wang, F. Su, and **P. P. S. S. Abadi***, *In One Dimensional Polymeric Nanocomposites: Synthesis to Emerging Applications*, R. Gupta, T. A. Nguyen (eds.), CRC (In press)

(Superscript * denotes corresponding author)

21. Nano-biomaterial Advances in Cardiovascular Tissue Engineering M. J. Hill, M. Mahmoudi, and **P. P. S. S. Abadi***, *In Cardiovascular Regenerative Medicine: Tissue Engineering and Clinical Applications*, V. Serpooshan, S. M. Wu (eds.), Springer Nature Switzerland AG (2019)

(Superscript § denotes authors of equal contribution)

Journal Papers

20. Editorial: Synthesis and Biomedical Applications of Functional Polymers
J. Ding, D. Li, J. Chen, C. Zhao, and **P. P. S. S. Abadi**, *International Journal of Polymer Science* (2021), DOI: 10.1155/2021/9763105

19. Additive manufacturing of conductive and high-strength epoxy-nanoclay-carbon nanotube composites
M. Kasraie, and **P. P. S. S. Abadi***, *Additive Manufacturing* 46, 102098 (2021)

18. Polyaniline-decorated Hyaluronic Acid-carbon Nanotube Hybrid Microfiber as a Flexible Supercapacitor Electrode Material
T. Zheng, X. Wang*, Y. Liu, R. Bayaniahangar, H. Li, C. Lu, N. Xu, Z. Yao, D. Zhang*, **P. P. S. S. Abadi***, *Carbon* 159, 65 (2020)

17. Nanomaterials for Bone Tissue Regeneration: Updates and Future Perspectives
M. J. Hill, B. Qi, R. Bayaniahangar, V. Araban, Z. Bakhtiary, A. Shaaji, M. R. Doschak, B. Goh, A. A. Zadpoor, M. B. Harris*, **P.P.S.S. Abadi***, M. Mahmoudi*, *Nanomedicine* 14, 22 (2019)

16. Biocompatible Carbon Nanotube-based Hybrid Microfiber for Implantable Electrochemical Actuator and Flexible Electronic Applications
T. Zheng[§], **P. P. S. S. Abadi**[§], J. Seo[§], B. H. Cha, B. Miccoli, Y. C. Li, K. Park, S. Park, S. J. Choi, R. Bayaniahangar, D. Zhang, S. H. Lee, C. K. Lee, A. Khademhosseini, and S. R. Shin, *ACS Applied Materials & Interfaces* 11 (23), 20615-20627 (2019)

15. Engineering of Mature Human Induced Pluripotent Stem Cell-Derived Cardiomyocytes using Substrates with Multi-Scale Topography
P. P. S. S. Abadi, J. C. Garbern, S. Behzadi, M. J. Hill, J. S. Tresbeck, T. Heydari, M. R. Ejtehadi, N. Ahmed, E. Copley, H. Aghaverdi, R. T. Lee, O. C. Farokhzad, and M. Mahmoudi, *Advanced Functional Materials*, 28, 19 (2018)
14. pH-Responsive DNA Nanolinker Conjugated Hybrid Materials for Electrochemical Microactuator and Biosensor Applications
Y. A. Jodat, P. Lotfi, **P. P. S. S. Abadi**, J. Mun, J. Seo, E. Shin, S. M. Jung, C. K. Lee, and S. R. Shin, *ACS Applied Nano Materials* 1, 6630–6640 (2018)
13. Chaotic Printing: Using Chaos to Fabricate Densely Packed Micro- and Nanostructures at High Resolution and Speed
G. Trujillo-de Santiago, M. Moises Alvarez, M. Samandari, G. Prakash, G. Chandrabhatla, P. Ines Rellstab-Sanchez, B. Byambaa, **P. P. S. S. Abadi**, S. Mandla, R. K. Avery, A. Vallejo-Arroyo, A. Nasajpour, N. Annabi, Y. S. Zhang and A. Khademhosseini, *Materials Horizons* 5, 813–822 (2018)
12. Flat Cell Culturing Surface May Cause Misinterpretation of Cellular Uptake of Nanoparticles
S. Behzadi, N. M. Vatan, K. Lema, D. Nwaobasi, I. Zenkov, **P. P. S. S. Abadi**, D. Ahmad Khan, C. Corbo, H. Aghaverdi, O. C. Farokhzad, and M. Mahmoudi, *Advanced Biosystems* 2, 1800046 (2018)
11. Mechanical Behav of Carbon Nanotube Forests Grown with Plasma Enhanced Chemical Vapor Deposition: Pristine and Conformally-Coated
P. P. S. S. Abadi, M. R. Maschmann, S. L. Hodson, T. S. Fisher, J. W. Baur, S. Graham, and B. A. Cola, *ASME Journal of Engineering Materials and Technology* 139, 034502 (2017)
10. Reversible Tailoring of Mechanical Properties of Carbon Nanotube Forests by Immersing in Solvents
P. P. S. S. Abadi, M. R. Maschmann, S. M. Mortuza, S. Banerjee, J. W. Baur, S. Graham, and B. A. Cola, *CARBON* 69, 178 (2014)
9. Deformation Response of Conformally-coated Carbon Nanotube Forests
P. P. S. S. Abadi, M. R. Maschmann, J. W. Baur, S. Graham, and B. A. Cola, *Nanotechnology* 24, 475707 (2013)
8. Buckling-driven Delamination of Carbon Nanotube Forests
P. P. S. S. Abadi, S. B. Hutchens, J. R. Greer, B. A. Cola, and S. Graham, *Applied Physics Letters* 102, 223103 (2013)
7. Post-growth Microwave Treatment to Align Carbon Nanotubes
J. J. Nguyen, T. L. Bougher, **P. P. S. S. Abadi**, A. Sharma, S. Graham, and B. A. Cola, *Journal of Micro and Nano-Manufacturing* 1, 014501–1 (2013)
6. Carbon Nanotube Thermal Interfaces Enhanced with Sprayed on Nanoscale Polymer Coatings
J. H. Taphouse, T. L. Bougher, V. Singh, **P. P. S. S. Abadi**, S. Graham, and B. A. Cola, *Nanotechnology* 24, 105401 (2013)
5. Compressive Response of Vertically Aligned Carbon Nanotube Films Gleaned from in Situ Flat-punch Indentations
S. Pathak, N. Mohan, **P. P. S. S. Abadi**, S. Graham, B. A. Cola, and J. R. Greer, *Journal of Materials Research* 28, 984 (2013)
4. Effects of Morphology on the Micro-compression Response of Carbon Nanotube Forests
P. P. S. S. Abadi, S. B. Hutchens, J. R. Greer, B. A. Cola, and S. Graham, *Nanoscale* 4, 3373 (2012)
3. Higher Recovery and Better Energy Absorption at Faster Strain Rates in Carbon Nanotubes Bundles: an in-situ Study
S. Pathak, E. J. Lim, **P. P. S. S. Abadi**, B. A. Cola, S. Graham, and J. R. Greer, *ACS Nano* 6,

2189 (2012)

2. Numerical Modeling of the Performance of Thermal Interface Materials in the Form of Paste-coated Sheets

P. P. S. S. Abadi and D. D. L. Chung, *Journal of Electronic Materials* 40, 1490 (2011)

1. Factors that Govern the Performance of Thermal Interface Materials

P. P. S. S. Abadi, C. K. Leong, and D. D. L. Chung, *Journal of Electronic Materials* 38, 175 (2009)

CONFERENCE
ABSTRACTS AND
PRESENTATIONS

(Advisees' names
are underlined)

(Superscript †
denotes the
presenting author)

22. Maturation of Cardiomyocyte using Electrical Stimulation

R. Bagheri[†], Xinqian Chen, Zhila Dehghan, Sara Abasi, Anthony Guiseppi-Elie, Vadym Mochalin, Zhiying Shan, and **P. P. S. S. Abadi**, UP Medical Conference, Houghton, MI, 2022

21. 3D Nano-Biohybrid Carbon Nanotube Forest - Cardiomyocyte Structures

R. Bagheri[†], Masoud Kasraie, Aparna Chandra, Xinqian Chen, Zhiying Shan, and **P. P. S. S. Abadi**, BMES annual Meeting, Orlando, FL, 2021

20. Additive Manufacturing of Conductive and High-Strength Epoxy-Nanoclay-Carbon Nanotube Composites

M. Kasraie and **P. P. S. S. Abadi**[†], MRS Spring Meeting (virtual), 2021

19. Carbon nanotube forest-cardiomyocyte 3D nano-biohybrid system

R. Bagheri[†], Masoud Kasraie, Aparna Chandra, Xinqian Chen, Zhiying Shan, and **P. P. S. S. Abadi**, ACS Upper Peninsula Meeting, Marquette, MI, 2021

18. Mechanical and Electrical Characteristics of Additively Manufactured Conductive Epoxy-Carbon Nanotube Composites

M. Kasraie[†] and **P. P. S. S. Abadi**, ASTM ICAM (virtual), 2020

17. 3D Printing of Conductive Epoxy-Carbon Nanotube Composite

M. Kasraie[†] and **P. P. S. S. Abadi**, TMS Annual meeting, San Diego, CA, 2020

16. Hyaluronic acid hydrogel supported carbon nanotube hybrid micro-biofiber as a biocompatible, electrochemical actuator

T. Zheng, **P. P. S. S. Abadi**[†], J. Seo, B-H. Cha, B. Miccoli, Y-C. Li, S. Park, S-J. Choi, R. Bayaniahangar, D. Zhang, S-H. Lee, C.-K. Lee, A. Khademhosseini, and S.R. Shin, BMES, Philadelphia, PA, 2019

15. Engineering of mature human induced pluripotent stem cell-derived cardiomyocytes using substrates with multi-scale topography

P. P. S. S. Abadi[†], J. C. Garbern, S. Behzadi, M. J. Hill, J. S. Tresbeck, T. Heydari, M. R. Ejtahadi, N. Ahmed, E. Copley, H. Aghaverdi, R.T. Lee, O. C. Farokhzad, and M. Mahmoudi, BMES, Atlanta, GA, 2018

14. Mechanical behavior of carbon nanotube forests grown with chemical vapor deposition

P. P. S. S. Abadi[†], M. R. Maschmann, S. L. Hodson, T. S. Fisher, J. W. Baur, S. Graham, and B. A. Cola, MRS Spring meeting, Phoenix, AZ, 2016

13. Compressive response of carbon nanotube forests: pristine, coated, and soaked

P. P. S. S. Abadi[†], M.R. Maschmann, S.B. Hutchens, J.W. Baur, J.R. Greer, B.A. Cola, and S. Graham, ASME IMECE, San Diego, CA, 2013

12. Compressive response of carbon nanotube forests: pristine, coated, and soaked

P. P. S. S. Abadi[†], M. R. Maschmann, S. B. Hutchens, J. W. Baur, J. R. Greer, B. A. Cola, and S. Graham, Gordon Research Conference on Nano-Mechanical Interfaces, Hong Kong, China, 2013

11. Compressive response of uncoated and coated carbon nanotube forests

P. P. S. S. Abadi[†], S. B. Hutchens, J. R. Greer, M. R. Maschmann, J. W. Baur, B. A. Cola, and S. Graham, Materials Research Society Spring Meeting, San Francisco, CA, 2013

10. Effects of solvent-infiltration on the mechanical properties of carbon nanotube forests

- P. P. S. S. Abadi**[†], M. R. Maschmann, J. W. Baur, B. A. Cola, ASME IMECE, Houston, TX, 2012
9. Mechanical behavior of conformally-coated carbon nanotube forests
P. P. S. S. Abadi[†], M. R. Maschmann, J. W. Baur, B. A. Cola, and S. Graham, Georgia Tech Research and Innovation Conference, Atlanta, GA, 2012
8. Mechanical behavior of conformally coated carbon nanotube forests
P. P. S. S. Abadi[†], B. A. Cola, and S. Graham, Materials Research Society fall meeting, Boston, MA, 2011
7. Effects of solvent-infiltration on the mechanical properties of carbon nanotube forests
P. P. S. S. Abadi[†], M. R. Maschmann, J. W. Baur, B. A. Cola, ASME IMECE, Houston, TX, 2012
6. Mechanical behavior of conformally-coated carbon nanotube forests
P. P. S. S. Abadi[†], M. R. Maschmann, J. W. Baur, B. A. Cola, and S. Graham, Society of Engineering Science 49th ATM, Atlanta, GA, 2012
5. Visualization of indentation of carbon nanotube forests
P. P. S. S. Abadi[†], J. H. Taphouse, S. Hutchens, J. R. Greer, B. A. Cola, and S. Graham, Georgia Tech Research and Innovation Conference, Atlanta, GA, 2011
4. Factors affecting the performance of foil-supported carbon nanotube forests as thermal interface materials
P. P. S. S. Abadi[†], B. A. Cola, and S. Graham, Canadian-American-Mexican Graduate Student Physics Conference, Washington, DC, 2011
3. Visualization of indentation of carbon nanotube forests
P. P. S. S. Abadi[†], J. H. Taphouse, S. Hutchens, J. R. Greer, B. A. Cola, and S. Graham, ASME Applied Mechanics and Materials Conference, Chicago, IL, 2011
2. Thermo-mechanical modeling of foil-supported carbon nanotube array interface materials
P. P. S. S. Abadi[†], B. A. Cola, and S. Graham, American Physical Society March Meeting, Portland, OR, 2010
1. Experimental and numerical study of thermal interface material performance
P. P. S. S. Abadi[†], C. Leong, and D. D. L. Chung, Advanced Technology Workshop on Thermal Management, Palo Alto, CA, 2008

SEMINARS
& INVITED
PRESENTATIONS

16. The 2nd International School on Fine-scale Processes: Facing with 4th Industrial Revolution Technologies, Organized by the Iran's top 5 Universities of Technology, (Webinar), 2022
15. Tarbiat Modares University, Tehran, Iran, (Webinar), 2022
14. Department of Chemistry, Michigan Tech, 2022
13. Department of Chemistry, Missouri University of Science and Technology, (Webinar), 2021
12. Department of Mechanical Engineering, University of Toledo, (Webinar), 2021
11. School of Engineering and Sciences, Tecnologico de Monterrey, Mexico, (Webinar), 2019
10. Department of Biomedical Engineering and Mechanics, Virginia Tech, 2019
9. Department of Materials Science and Engineering, Michigan Tech, 2018
8. Department of Biomedical Engineering, Michigan Tech, 2018
7. Department of Mechanical Engineering, University of Houston, 2017
6. Department of Mechanical Engineering, University at Buffalo, 2017
5. Department of Mechanical Engineering, Texas A&M University, 2016

4. Department of Mechanical Engineering-Engineering Mechanics, Michigan Tech, 2016
3. Department of Mechanical Engineering, University of Nevada Reno, 2016
2. Department of Mechanical Engineering, The City College of New York, January 2014
1. Department of Mechanical Engineering, Stevens Institute of Technology, 2013

TEACHING
EXPERIENCE

Michigan Technological University
 Biomechanics
 Mechanics of Materials
 Intermediate Mechanics of Materials
 Special Topic: Materials for Sensors and Actuators in Medical Applications

Stevens Institute of Technology
 Thermodynamics
 Mechanics of Solids

GRADUATE
STUDENTS &
POST-DOCTORAL
ADVISEES

Akash Gawde, M.S. Student	2022 – present
Roya Bagheri, Ph.D. Student	2020 – present
Masoud Kasraie, Ph.D. Student	2019 – 2022
Christiana Strong, M.S. Student	2021 – 2022
Aparna Chandra, M.S. Student	2020 – 2021
Saurabh Karanke, M.S. Student	2020 – 2021
Onkar Prakash Salunkhe, M.S. Student	2020 – 2021
Grace Billman-Benveniste	Summer 2019
Dr. Michael Hill, Post-doctoral Fellow	2017 – 2019

UNDERGRADUATE
STUDENTS

Neva Manas	2021 – present
Dominika Bobik	Spring 2020
Alicia Ball	2017 – 2020
Daniel Woodall	2018 – 2019
Josh Loiselle	2017 – 2018
Shawn Maguire	Spring 2014
Kathleen Gamble	Spring 2014

HIGH SCHOOL
INTERNS

Corey Deans	Summer 2019
Davaughn Smith	Summer 2018

PROFESSIONAL
MEMBERSHIP

American Heart Association
 American Society of Mechanical Engineers
 Materials Research Society
 Biomedical Engineering Society
 Society of Engineering Science