

CURRICULUM VITAE

Dr. ir. Johannes T. B. (Bas) Overvelde

E-mail: overvelde@amolf.nl
j.t.b.overvelde@tue.nl
Website (personal): www.linkedin.com/in/overvelde
www.researchgate.net/profile/johannes-overvelde
www.research.tue.nl/en/persons/bas-overvelde
Website (group): www.overvelde.com
www.amolf.nl/research-groups/soft-robotic-matter
Website (outreach): www.studioovervelde.com
www.softmodbot.com



PROFILE

An academic visionary, conveying a philosophy centered around creativity and inclusiveness, with a passion for interdisciplinary collaboration. Understands the importance of diverse perspectives and the power of a broad network whilst striving for academic excellence. Creates a safe atmosphere that stimulates teamwork and intellectual curiosity, fostering professional and personal growth. Driven by a commitment to open science, actively seeks opportunities for knowledge exchange in academia and with the general public, not only to impart knowledge but to inspire and encourage questions, innovations, and excellence. Sees and creates possibilities.

IN SHORT

Work: **Group Leader (tenured)** AMOLF, Soft Robotic Matter Group
Associate Professor TU/e, Dynamics and Control Section of the Department of Mechanical Engineering, and the Institute for Complex and Molecular Systems (ICMS)

Group: Members: 2 Postdocs (+1 opening), 7 PhD students (+3 openings), 1 technician, 2 interns
Alumni: 2 Postdocs, 3 PhD students, 1 visiting Postdoc, 2 visiting PhD students, 3 research assistants, 1 artist, 35 interns

Education: **PhD**, School of Engineering and Applied Sciences, Harvard University
SM Applied Mathematics, School of Engineering and Applied Sciences, Harvard University
BSc & MSc Mechanical Engineering (*cum laude*), Delft University of Technology

Grants: >**5M€** for my group, including NWA ORC (2023), ERC StG (2020), Veni (2017), H2020 Fet Open (2017)

Awards: KNAW Early Career Award (2022), Engineering Talent De Ingenieur (2020), Best Graduate TU Delft (2012)

Service: **Board Member** Centre for Unusual Collaboration (CUCo)
Member Eindhoven Young Academy of Engineering (EYAE)
Associate editor open access journal Programmable Materials, Cambridge University Press
Chair staff meeting AMOLF
Accredited confidential advisor AMOLF and ARCNL

Publications: Nature, Science, PNAS, Matter, PRL, Nature Reviews Cardiology, Advanced Materials, Nature Communications, Science Advances, Advanced Functional Materials, Soft Robotics, IEEE Transactions on Robotics, IEEE Transactions on Mechatronics, JMPS

Outreach: NEMO, Rijksmuseum Boerhaave, La Gaité Lyrique, Cinekid, KIKK Festival, Dutch Design Week, Eindhoven Maker Faire, TEDx, PINC.18

Media: TV: Atlas NTR, INScience NPO
Radio: BNR Wetenschap, Nature Podcast, NPO1 Nieuws & Co
Press: New Scientist, De Ingenieur, Het Parool, De Volkskrant, NRC Handelsblad, NRC Next, Elsevier, Scientific American, The Times, The Telegraph, Financial Times

WORK EXPERIENCE

- 2024-present: Centre for Unusual Collaboration (NL)
Board Member
- 2020-present: Eindhoven University of Technology (NL)
Associate Professor
Dynamics and Control Section, Department of Mechanical Engineering and the Institute for Complex and Molecular Systems (ICMS)
- 2016-present: Soft Robotic Matter Group, AMOLF (NL)
Group Leader (Tenured)
Current Group members: Niels Commandeur (Technician), Sumit Mohanty, Stijn Koppen (Postdoc), Mannus Schomaker, Alberto Comoretto, Bob Huisman, Elif Kurt, Sergio Picella, Paul Ducarme, Katrien van Riet, Nienke Reitsma (PhD students), Maziar Arfaee (visiting PhD student), 2 Master interns
Alumni: Florian Wruck, Udit Choudhury, Shibo Zou (Postdoc), Giorgio Oliveri, Agustin Iniguez-Rabago, Luuk van Laake (PhD students), Jelle de Vries, Cesare Carissimo, Chartlotte Bording (Research Assistant), Lyndsey Housdon (Artist), 1 visiting postdoc, 2 visiting PhD students, 8 Bachelor interns and 29 Master interns
- 2017-present: Studio Overvelde (NL)
Technical Consultant
- 2011-2012: Femto Engineering (NL)
Consultant, R&D and FEM engineer
- 2009-2010: Department of Industrial Design, Delft University of Technology (NL)
Warehouse and Personnel Manager

EDUCATION

- 2012-2016: School of Engineering and Applied Sciences, Harvard University (US)
PhD in Applied Mathematics
PhD dissertation: 'Embracing Compliance and Instabilities to Achieve Function in Mechanical Metamaterials and Devices'. Advisor prof. Katia Bertoldi. [\[pdf\]](#)
- 2012-2013: School of Engineering and Applied Sciences, Harvard University (US)
SM in Applied Mathematics
- 2009-2012: Delft University of Technology (NL)
MSc in Mechanical Engineering
Cum laude
Specialization: Solid and Fluid Mechanics.
Master's thesis: 'The Moving Node Approach in Topology Optimization - An Exploration to a Flow-inspired Meshless Method-based Topology Optimization Method'. Advisors prof. dr. ir. Fred van Keulen and dr. ir. Matthijs Langelaar. [\[pdf\]](#)
Research Internship: 'The Effect of Shape on Periodic Structures Undergoing Elastic Instability', Harvard University (US).
- 2006-2009: Delft University of Technology (NL)
BSc in Mechanical Engineering
Cum laude
- 2004-2009: Delft University of Technology (NL)
P (propaedeutic exam) in Applied Physics
- 1998-2004: CSG het Noordik, Almelo (NL)
VWO (preparatory scientific education)

TEACHING

- 2021-present: TU/e (NL)
Lecturer in Device Integrated Responsive Materials Project Course 6EMA62
- 2016-present: AMOLF (NL)
Mentor of (inter)national Bachelor's (8) and Master's (29) students
Guest Lecturer in Instabilities in Soft Structures
- 2015-present: ETH Zurich (CW), Harvard University (US), WUR (NL), TU Delft (NL), University of Amsterdam (NL) and the Royal Academy of Art (NL)
Guest Lecturer in Soft Robotics and Mechanical Metamaterials

- 2014: School of Engineering and Applied Sciences, Harvard University (US)
Teaching Fellow Computational Solid and Structural Mechanics ES128
- 2013-2015: Bertoldi Group, Harvard University (US)
Mentor of (inter)national Bachelor's (1) and Master's (9) students
- 2008-2009: Department of Industrial Design, TU Delft (NL)
Lab Instructor WBTP113-07 and WBTP115 drilling, milling, turning and welding
- 2008-2009: Cultural Center Delft (NL)
Instructor weekly juggling workshops

GRANTS

- 2024: Demonstrator, NWO (NL)
Co-applicant "A Drop-in Sensing Method for Smart Handling of Fresh Fruits with Soft Pneumatic Grippers"
- 2023: AMOLF & TU/e collaboration (NL)
Main applicant "Towards Human Interaction in Soft Robotics"
- 2023: NWA-ORC, NWO (NL)
Main applicant "Holland Hybrid Heart"
- 2022: KIEM GoCI, NWO (NL)
Co-applicant "Designing Shape-Changing Textiles"
- 2022: Zwaartekracht, NWO (NL)
Co-applicant "Interactive Polymer Materials Research Center"
- 2021: ASML/ARCNL/AMOLF collaboration (NL)
Main applicant "Mechanical Metamaterials for Positioning"
- 2020: Startup package, TU/e (NL)
Personal grant to stimulate collaborations between the Soft Robotic Matter group and TU/e
- 2020: H2020-ERC Stg, European Commission (EU)
Personal grant "Smart fluidic circuits for autonomous soft robots"
- 2019: IPBooster, European Commission (EU)
Co-applicant for IP related fees Hybrid Heart consortium
- 2019: Lorentz workshop @Snellius, Lorentz Center (NL)
Co-organizer workshop "Autonomous behaviour in living and robotic matter"
- 2017: Veni Innovational Research Incentives Scheme, NWO (NL)
Personal grant "Integrating mechanical metamaterials in soft robots"
- 2017: H2020-FETOPEN, European Commission (EU)
Co-chair consortium "Hybrid Heart: Development of the first fully biocompatible, soft actuated heart"
- 2017: European cooperation project "Les Voyages de Capitaine futur" (EU),
Co-applicant to build interactive art installation "Edge of Chaos"
- 2017: KIEM Creative Industry, NWO (NL)
Co-applicant "Project Cairo: an intelligent, soft-robotic jacket"
- 2017: Internal competition to promote collaboration and hire Postdoc, AMOLF (NL)
Co-applicant "Stochastic Molecular Matter"
- 2016: Startup package, AMOLF (NL)
Personal grant to start the "Soft Robotic Matter" group
- 2014: Haythornthwaite Foundation Student Travel Award, ASME AMD (US)
- 2014: Robert L. Wallace Prize Fellowship, Harvard University (US)
- 2013: Robert L. Wallace Prize Fellowship, Harvard University (US)
- 2012: Fulbright Grant, The Fulbright Center (NL)
- 2012: University Fund Delft Grant, TU Delft (NL)
- 2010: Justus & Louise van Effen Excellence Scholarship, TU Delft (NL)

AWARDS

- 2022: Koninklijke Nederlandse Akademie van Wetenschappen Early Career Award (NL)

- 2022: Nominated for TU/e Science Award (NL)
- 2020: Engineering Talent 2020, De Ingenieur (NL)
- 2019: Invention Disclosure Form (with L. C. van Laake), AMOLF (NL)
- 2018: Nominated for New Scientists Scientific Talent award (NL)
- 2018: Maker of Merit Award, Makerfaire Eindhoven (NL)
- 2017: Runner-up Soft Robotic Toolkit online competition, Harvard University (US)
- 2015: 1st prize winner of the Gallery of Mechanics at New.Mech 2015, Boston University (US)
- 2014: Certificate of Excellence and Distinction in Teaching for the course ES128, Derek Bok Center for Teaching and Learning, Harvard University (US)
- 2012: UfD-Best Graduate of 3mE Faculty Grant, TU Delft (NL)
- 2011: Employee of the Year Award, Femto Engineering (NL)
- 2009: Best Research Award, BSc thesis TU Delft (NL)

PROFESSIONAL SERVICE

Associate editor

ICRA, IEEE Robotics & Automation Society (2024)

Open Access journal “Programmable Materials”, Cambridge University Press (2022-present)

Workshop organizer

Co-organizer Lorentz workshop@Snellius (2020).

Co-organizer AMOLF Autonomous Matter symposium (2023).

Conference session organizer and chair

Co-organizer of sessions at the APS March Meeting (2017-2020) and at SES (2018-2020).

PhD Committees

Promoter: L. Van Laake (2023), G. Oliveri, A. Iniguez-Rabago (2021).

Member: P. Bartels, T. Guo, B. van Raemdonck, B. Caasenbrood (2024), A. Singh, S. Jafarzadeh (2023), Y. Zhang, D. Zrinscak, M. Essink (2022), N. Singh (2019), P. Dieleman, L. Lubbers (2018), B. Florijn (2016).

MSc Committees

K. Kieboom, O. Vaarkamp (2024), K. van Riet (2023), S. Rademaekers, J. Tait, M. Collaris (2022), S. Picella, J. de Vries (2021), M. Schomaker, C. Carissimo, G. Galiti (2020), A. Pasman (2019), R. Jongerius (2018), A. Sabbadini, A.A.T.M. Delissen (2016).

Ad hoc reviewer

Science, Science Robotics, Science Advances, Nature, Nature Materials, Nature Physics, Nature Communications, Nature Energy, Nature Nanotechnology, PNAS, Matter, Soft Robotics, Soft Matter, PRL, PRX, PRE, Advanced Materials, Advanced Functional Materials, Advanced Science, Advanced Materials Technologies, EML, JAM, IEEE/ASME International Conference on Advanced Intelligent Mechatronics, IEEE Robosoft SIAM Journal on Scientific Computing.

Reviewer grant proposals and scholarships

EU StG, SNSF, NWO Rubicon, JKU LIT, TTW OTP, ENIAC scholarship

Professional membership

Eindhoven Young Academy of Engineering (2022-2026)

Dutch Soft Robotics Consortium

The American Society of Mechanical Engineers (ASME)

American Physical Society (APS)

Society of Engineering Science (SES)

@Harvard University (US)

Social and year-end event committee for Materials Science and Mechanical Engineering (2014-2016)

@AMOLF (NL)

Chair staff meeting (2024-present)

Accredited Confidential Advisor (2023-present)

Data management team (2019-2020), chair data management team (2020-2024)

Organizer open day (2016-2019)

Improving AMOLF website (2016-2017)

INVITED TALKS

- 2024 AMOLF alumni Day, AMOLF (NL)
Invited talk: Soft robots that harness the physics of everyday objects

- 2024 Biological fluid mechanics and soft matter, Wageningen University (NL)
Invited talk: Synchronized self-oscillating actuators for ultrafast soft fluidic robots
- 2024 NWO, Utrecht (NL)
Invited talk: Van een sputterende ketchupfles naar een hartslag voor een zacht kunsthart
- 2024 SES, Hangzhou (CH)
Invited talk: Synchronized self-oscillating actuators for ultrafast soft fluidic robots
- 2024 Pint of Science, Eindhoven (NL)
Invited talk: From sputtering ketchup bottles to soft robots
- 2024 Princeton University Mechanical Engineering Department, Princeton (US)
Invited talk: Synchronized self-oscillating actuators for ultrafast soft fluidic robots
- 2024 IEEE Robosoft, San Diego (US)
Invited talk: Synchronized self-oscillating actuators for ultrafast soft fluidic robots
- 2024 REM seminar series, TU/e (NL)
Invited talk: Towards Physical intelligence in soft robotic devices
- 2024 Embodied Intelligence conference, online
Invited talk: Autonomous phototaxis in soft modular robots enabled by embodied learning
- 2024 Meet the committee members, KU Leuven (BE)
Invited talk: There's no Silicon in these Silicone robots!
- 2023 Convergence? Interfaces of the digital and the living, Austrian Academy of Sciences(NL)
Invited talk: Physcial Intelligence in Soft Robots [\[web\]](#)
- 2023 Dutch Soft Robotics Symposium, Twente (NL)
Invited talk: There's no Silicon in these Silicone robots!
- 2023 IEEE Robosoft conference, Singapore (SG)
Invited talk: Harnessing Instabilities to Embody Intelligence in Soft Robots
- 2023 IEEE Robosoft conference, Singapore (SG)
Invited talk: Fluidic Sensing and Memory in Soft Robots
- 2023 Physics colloquium, Eindhoven University of Technology, Eindhoven(NL)
Invited talk: Embodied Fluidic Circuits to Control Soft Robots
- 2023 Interactive Design colloquium, Eindhoven University of Technology, Eindhoven(NL)
Invited talk: Embodying Intelligence in Soft Fluidic Robots
- 2022 Soft Matter seminar University of Amsterdam, Amsterdam (NL)
Invited talk: Continuous learning of emergent behavior in robotic matter
- 2021 NWO, online (NL)
Invited talk: Zachte Robots
- 2021 Biosystems Engineering, Wagening University & Research, online (NL)
Guest lecture: Soft robotics: pneumatic actuation
- 2021 TU/e Polymer Technology group, online (NL)
Invited talk: Embodied fluidic circuits to control soft robots
- 2021 IBEC - ICMS joint symposium, online (NL)
Invited talk: Embodied intelligence in soft robots
- 2021 Princeton University PRISM seminar series, online (US)
Invited talk: Embodied fluidic circuits to control soft robots
- 2020 BioRob Cardio workshop, online (US)
Invited talk: Embodied fluidic circuits to control soft robots
- 2020 ETCH Zurich seminar series on robotics, online (CH)
Invited talk: Embodied fluidic circuits to control soft robots
- 2020 Lunch Meeting TU/e D&C, online (NL)
Invited talk: Embodied fluidic circuits to control soft robots
- 2020 INM virtual mini-symposium, online (GE)
Invited talk: Rational design of reconfigurable and multistable metamaterials
- 2020 IEEE Robosoft, online (US)
Invited talk: Continuous learning of emergent behavior in robotic matter
- 2020 Living Machines Conference, online (GE)

- Keynote talk:** Adaptive behavior through decentralized learning in soft robotic matter
- 2019 Topics in IC, Utrecht (NL)
Invited talk: Soft Robots
- 2019 FlexMOF, Dresden (GE)
Invited talk: Origami-inspired Mechanical Metamaterials
- 2019 ICMS Colloquia, Eindhoven (NL)
Invited talk: Soft Robotic Matter
- 2019 General Physics Colloquium, Groningen (NL)
Invited talk: Embedded Control of Soft Robots
- 2019 ESA, Noordwijk (NL)
Invited talk: Embedded Control of Soft Robots
- 2019 livMatS, Freiburg (GE)
Invited talk: Embedding Fluid Logic and Self-learning in Soft Robotic Matter
- 2019 Royal Academy of Art, Den Haag (NL)
Guest lecture and workshop: Origami-inspired Materials and Robots
- 2019 Gordon Conference Crystal Growth and Assembly, Manchester US
Invited talk: Transforming Materials
- 2019 Hyber, Helsinki (FI)
Invited talk: Soft Robotic Matter
- 2019 ICMS Outreach Symposium, Eindhoven (NL)
Invited talk: Sequential Actuation of Soft Robots by Harnessing Soft Fluidic Networks
- 2019 Studium Generale, Groningen (NL)
Keynote talk: Origami-inspired Materials and Robots
- 2018 ASME IMECE, Pittsburgh (US)
Invited talk: Computational Design of Multistable Prismatic Architected Materials
- 2018 Fablearn, Eindhoven (NL)
Masterclass: RainMaker: from Mechanical Metamaterial to Interactive Art Installation
- 2018 The Hamlyn Symposium on Medical Robotics, London (UK)
Invited talk: Programming the Response of Fluidic Soft Actuators by Harnessing Nonlinearities
- 2018 ReMAR, Delft (NL)
Invited talk: Transforming Materials
- 2018 Equinix, Amsterdam (NL)
Keynote talk: Mathemagical interconnections
- 2018 Nationale Wiskundedagen, Noordwijkerhout (NL)
Invited talk: Van Origami-materialen naar Zachte Robots
- 2018 Physics@Veldhoven, Veldhoven (NL)
Invited talk: Rational Design of Reconfigurable Architected Materials
- 2018 Gordon Conference Multifunctional Materials and Structures, Ventura (US)
Invited talk: Finding the Mechanically Stable States in Prismatic Architected Materials
- 2017 SURFnet, Utrecht (NL)
Invited talk: Van Origami-materialen naar Zachte Robots
- 2017 Ars and Mathesis, Utrecht (NL)
Invited talk: Transforming Materials
- 2017 ARCNL, Amsterdam (NL)
Invited talk: Embracing compliance and instabilities in mechanical systems
- 2017 TEDxGroningen, Groningen (NL)
Invited talk: What can we learn from crumpling a piece of paper?
- 2017 School of Architecture, TU Delft (NL)
Guest lecture: Robotic Building - Media Studies
- 2017 AMOLF Open Dag, Amsterdam (NL)
Invited talk: Van Origami-materialen naar Zachte Robots
- 2017 HMC Zomeracademie, Rotterdam (NL)

- Invited talk:** Magic Materials make Soft Robots
- 2017 Soft and Biological Matter Seminar, Leiden (NL)
Invited talk: Rational Design of Reconfigurable Architected Materials
- 2017 PINC.18 Conference, Utrecht (NL)
Invited talk: Magic Materials make Soft Robots
- 2017 SMS Europe, Paris (FR)
Invited talk: Rational Design of Reconfigurable Architected Materials
- 2017 AMOLF, Amsterdam (NL)
public colloquium: Rational Design of Reconfigurable Devices and Architected Materials
- 2016: AMOLF, Amsterdam (NL)
Friday seminar: Soft Robotic Matter
- 2016: 3D Printing Materials Conference, Maastricht (NL)
Invited talk: Embracing Compliance in Robots to Achieve Function
- 2015: Designer Matter, AMOLF (NL)
Invited talk: Controlling Soft Structures and Devices by Embedded Actuation and Sensing
- 2015: Aerospace Structures and Computational Mechanics, TU Delft (NL)
Invited talk: Actuated Materials, Smart Actuated Structures and Devices that Harness Compliance and Instabilities
- 2015: Institute Lorentz, Leiden University (NL)
Soft Matter Physics Seminar: Mechanical Metamaterials that Harness Instabilities and Folding
- 2015: School of Engineering and Applied Sciences, Harvard University (US)
MSME Year End Event: From Origami to Transformable Metamaterials
- 2015: Graduate School of Design, Harvard University (US)
Guest Lecturer in Computational Material Distributions and Gradients of Compliance (SCI 0642500)
- 2014: Wyss Institute for Biologically Inspired Engineering, Harvard University (US)
Soft Robotics General Meeting: Finite Element Analysis of Soft Liquid Embedded Strain Sensors
- 2014: School of Engineering and Applied Sciences, Harvard University (US)
Mech & Math: Instabilities in Pressure-Volume relation of inflatable Membranes
- 2014: Graduate School of Design, Harvard University (US)
Guest Lecturer in Computational Material Distributions and Gradients of Compliance (SCI 0642500)
- 2012: School of Engineering and Applied Sciences, Harvard University (US)
Mech & Math: Shape Optimization of Soft Periodic Structures
- 2010: School of Engineering and Applied Sciences, Harvard University (US)
Abaqus Masterclass

CONFERENCES & COLLOQUIA TALKS

- (93) **Comoretto, A., Schomaker, M., Overvelde, J.T.B.** (2024) Synchronized kink waves for ultrafast fluidic robots, GRS, Ventura, US. *Presentation.*
- (92) **Ducarme, P.,** Weber, B., Van Hecke, M., **Overvelde, J.T.B.** (2023) Exotic Functionalities Enabled by Structures Showing Counter-snapping Instabilities, GRS, Ventura, California, US. *Presentation.*
- (91) **Ducarme, P.,** Weber, B., Van Hecke, M., **Overvelde, J.T.B.** (2023) Surprising deformations in structures made out of flexible building blocks, Creative Differences Workshop (London Design Biennale), London, (UK). *Presentation.*
- (90) **Comoretto, A., Overvelde, J.T.B.,** (2023) Fluidic memory and sensing for autonomous soft robots, Autonomous Matter Symposium @AMOLF, Amsterdam, (NL). *Poster.*
- (89) **Schomaker, M., Picella, S., Kung, A., Van Laake, L.C., Overvelde, J.T.B.,** (2023) Decentralized control in soft robots: distributing the brain over the body, Autonomous Matter Symposium @AMOLF, Amsterdam, (NL). *Poster.*

- (88) **Ducarme, P.**, Weber, B., Van Hecke, M., **Overvelde, J.T.B.**, (2023) Unique structural functions enabled by a novel mechanical instability, Autonomous Matter Symposium @AMOLF, Amsterdam, (NL). *Poster*.
- (87) **Mohanty, S.**, **Overvelde, J.T.B.**, (2023) Bridging the size-gap in soft robots, Autonomous Matter Symposium @AMOLF, Amsterdam, (NL). *Poster*.
- (86) **Van Riet, K.**, **Zou, S.**, **Overvelde, J.T.B.**, (2023) Soft Circuits Toolkit, Autonomous Matter Symposium @AMOLF, Amsterdam, (NL). *Poster*.
- (85) **Schomaker, M.**, **Picella, S.**, **Kung, A.**, **Van Laake, L.C.**, **Overvelde, J.T.B.**, (2023) Decentralized control in soft robots: distributing the brain over the body, APS March Meeting. Las Vegas, (US). *Presentation*.
- (84) **Comoretto, A.**, **Overvelde, J.T.B.**, (2023) Fluidic memory and sensing for autonomous soft robots, APS March Meeting, Las Vegas, (US). *Presentation*.
- (83) **Ducarme, P.**, Weber, B., Van Hecke, M., **Overvelde, J.T.B.**, (2023) Exotic properties enabled by counter-snapping instabilities, APS March Meeting, Las Vegas, (US). *Presentation*.
- (82) **Picella, S.**, **Van Riet, K.**, **Overvelde, J.T.B.**, (2023) Endowing soft robots with counting capabilities, APS March Meeting, Las Vegas, (US). *Presentation*.
- (81) **Arfaee, M.**, Kluin, J., **Overvelde, J.T.B.**, (2023) Modeling the behavior of elastic pouch motors, IEEE Robosoft conference, Singapore, (SG). *Presentation*.
- (80) **Overvelde, J.T.B.**, (2022) Towards Autonomous Soft Robots by Using Smart Fluidic Circuits, Soft Robotics Summer School, Delft, (NL). *Presentation*.
- (79) **Schomaker, M.**, **Picella, S.**, **Kung, A.**, **Van Laake, L.C.**, **Overvelde, J.T.B.**, (2022) Decentralized control in soft robots: distributing the brain over the body, Klein Colloquium @ AMOLF, Amsterdam, (NL). *Presentation*.
- (78) **Comoretto, A.**, **Overvelde, J.T.B.**, (2022) Fluidic memory and sensing for autonomous soft robots, GRC Gordon Robotics, Ventura, (US). *Presentation*.
- (77) **Schomaker, M.**, **Picella, S.**, **Kung, A.**, **Van Laake, L.C.**, **Overvelde, J.T.B.**, (2022) Decentralized control in soft robots: distributing the brain over the body, GRC Gordon Robotics, Ventura, (US). *Presentation*.
- (76) **Ducarme, P.**, Weber, B., Van Hecke, M., **Overvelde, J.T.B.**, (2022) Design of a mechanical metamaterial with a negative-displacement transition, ASML Tech Meeting, Veldhoven, (NL). *Presentation*.
- (75) **Picella, S.**, **Overvelde, J.T.B.**, (2022) Towards emergent behavior in modular soft robots, ICMS Annual Symposium, Eindhoven, (NL). *Poster*.
- (74) **Zou, S.**, **De Vries, J.**, **Picella, S.**, Kortman, V., Sakes, A., **Overvelde, J.T.B.**, (2022) Can a Soft Actuator Be a Sensor? Klein Colloquium @AMOLF, Amsterdam, (NL). *Presentation*.
- (73) **Overvelde, J.T.B.**, (2022) Soft Robotic Matter group, Shaping the Future of Robotics through Material Innovation, Kreuth, (DE). *Presentation*.
- (72) **Comoretto, A.**, **Overvelde, J.T.B.**, (2022) Smart fluidic circuits for electronics-free untethered soft robots, APS March Meeting 2022, Chicago, (US). *Presentation*.
- (71) **Comoretto, A.**, **Overvelde, J.T.B.**, (2022) Fluidic memory and sensing for autonomous soft robots, ESMC 2022, Galway, (IE). *Presentation*.
- (70) **Comoretto, A.**, **Overvelde, J.T.B.**, (2022) Fluidic memory and sensing for autonomous soft robots, Dutch Soft Robotics Symposium 2022, Delft, (NL). *Presentation*.
- (69) **Schomaker, M.**, **Picella, S.**, **Kung, A.**, **Van Laake, L.C.**, **Overvelde, J.T.B.**, (2022) Decentralized control in soft robots: distributing the brain over the body, APS March Meeting, Chicago, (US). *Presentation*.
- (68) **Zou, S.**, **De Vries, J.**, **Picella, S.**, Kortman, V., Sakes, A., **Overvelde, J.T.B.**, (2022) A Universal Fluidic Sensing Strategy for Soft Robots, Dutch Soft Robotics Symposium, Delft, (NL). *Presentation*.
- (67) **Zou, S.**, **Overvelde, J.T.B.**, (2022) Towards Soft Autonomous Robots with Smart Fluidic Circuits, 2022 Shaping the Future of Robotics through Material Innovation, Kreuth, (DE). *Poster*.
- (66) **Zou, S.**, **De Vries, J.**, **Picella, S.**, Kortman, V., Sakes, A., **Overvelde, J.T.B.**, (2022) Can a Soft Actuator Be a Sensor? 31st Dutch Soft Matter Meeting, Delft, (NL). *Presentation*.

Presentation.

- (65) **Van Laake, L.C., Overvelde, J.T.B.** (2022) Reprogrammable Sequential Activation of soft Actuators, IEEE Robosoft conference. Edinburgh, (IE). *Presentation*.
- (64) **Van Laake, L.C., Overvelde, J.T.B.** (2022) Non-linear Fluidic Control Circuits Enable Autonomy in Soft Robotics, International Workshop on Embodied Intelligence. *Online Presentation*.
- (63) **Van Laake, L.C., Overvelde, J.T.B.** (2022) Experimental Characterization and Numerical Simulation of Soft total Artificial Hearts, ESMC (IE). *Presentation*.
- (62) **Van Laake, L.C., Overvelde, J.T.B.** (2022) Fluidic Control of Soft Robots for Future Medical Applications, HTRIC kick-off event, Groningen (NL). *Invited presentation*.
- (61) **Zou, S., De Vries, J., Picella, S., Kortman, V., Sakes, A., Overvelde, J.T.B.**, (2022). Can a soft actuator be a sensor. Dutch Soft Matter Meeting. Delft (NL). *Presentation*.
- (60) **Zou, S., De Vries, J., Picella, S., Kortman, V., Sakes, A., Overvelde, J.T.B.**, (2022). Can a soft actuator be a sensor. Klein Colloquium @AMOLF. Amsterdam (NL). *Presentation*.
- (59) **Schomaker, M., Picella, S., Kung, A., Van Laake, L.C., Overvelde, J.T.B.**, (2022). Towards emergent control with minimal resources. Klein Colloquium @AMOLF. Amsterdam (NL). *Presentation*.
- (58) **Comoretto, A., Van Laake, L.C., Overvelde, J.T.B.**, (2022) Smart fluidic circuits for electronics-free untethered soft robots. APS March meeting. Chicago (US). *Presentation*.
- (57) **Schomaker, M., Picella, S., Kung, A., Van Laake, L.C., Overvelde, J.T.B.**, (2022). Harnessing stigmergy for emergent adaptive control, in soft modular systems. APS March meeting. Chicago (US). *Presentation*.
- (56) **Arfaee, M., Overvelde, J.T.B., Kluin, J.**, (2021). A soft robotic fluidic transmission systems. ICTAM. (US). *Online poster*.
- (55) **Van Laake, L.C., Overvelde, J.T.B.**, (2021). A heartbeat for soft robots. Physics@Veldhoven, Veldhoven (NL). *Online presentation*.
- (54) **Van Laake, L.C., Overvelde, J.T.B.**, (2021). Responsive and mechanically programmable sequential actuation of fluid-driven soft actuators. Conversations on Bioinspired Engineering. (US). *Online presentation*.
- (53) **Wruck, F., Overvelde, J.T.B.**, Tans, S., (2021). Stochastic Molecular Matter. ICMS annual symposium TU/e. (NL). *Online poster*.
- (52) **Schomaker, M., Picella, S., Overvelde, J.T.B.**, (2021). Towards the design of emergent phenomena in robotic materials. ICMS annual symposium TU/e. (NL). *Online poster*.
- (51) **Schomaker, M., Comoretto, A.**, (2021). Soft robotic research at AMOLF. AUC springboard event. (NL). *Online poster*.
- (50) **Arfaee, M., Overvelde, J.T.B., Kluin, J.**, (2021). A soft robotic fluidic transmission systems. SES. (US). *Online poster*.
- (49) **Van Laake, L.C., De Vries, J., Malek Kani, S., Overvelde, J.T.B.**, (2021). Responsive and mechanically programmable sequential actuation of fluid-driven soft actuators. SES. (US). *Online poster*.
- (48) **Schomaker, M., Picella, S., Overvelde, J.T.B.**, (2021). Towards decentralized emergent control in dynamic locomotion tasks. SES. (US). *Online poster*.
- (47) **Iniguez-Rabago, A., Overvelde, J.T.B.**, (2021). Elastic origami metamaterials and how to control their folding behavior. EMI2021-IC. Durham (UK). *Online presentation*.
- (46) **Iniguez-Rabago, A., Overvelde, J.T.B.**, (2021). Elastic origami metamaterials and how to control their folding behavior. Physics@Veldhoven. Veldhoven (NL). *Online presentation*.
- (45) **Van Laake, L., Malek Kani, S., Overvelde, J.T.B.**, (2020). Programming Soft Robots Using Non-linear Fluidic Circuits. Physics@Veldhoven. Veldhoven (NL). *Poster*.
- (44) **Iniguez-Rabago, A., Milleret, A., Overvelde, J.T.B.**, (2020). Towards Origami Tessellations with Bistable Folds. Gordon Conference - Multifunctional Materials and Structures. Ventura (US). *Poster*.
- (43) **Oliveri, G., Van Laake, L., Carissimo, C., Miette, C., Overvelde, J.T.B.**, (2020). Decentralized Reinforced Learning of Emergent Behavior in Robotic Matter. Gordon Conference - Multifunctional Materials and Structures, Ventura (US). *Poster*.
- (42) **Oliveri, G., Overvelde, J.T.B.**, (2020). Inverse Design of Mechanical Metamaterials that Undergo Buckling. Gordon Conference - Multifunctional Materials and Structures, Ventura (US). *Poster*.

- (41) Van Laake, L., Malek Kani, S., Overvelde, J.T.B., (2020). Programming Soft Robots Using Non-linear Fluidic Circuits. Gordon Conference - Robotics. Ventura (US). *Poster*.
- (40) Oliveri, G., Van Laake, L., Carissimo, C., Miette, C., Overvelde, J.T.B., (2020). Decentralized Reinforced Learning of Emergent Behavior in Robotic Matter. Gordon Conference - Robotics, Ventura (US). *Poster*.
- (39) Van Laake, L., Malek Kani, S., Overvelde, J.T.B., (2019). Towards Fully Soft Robots Using Fluidic Circuits. Chains. Veldhoven (NL). *Invited presentation*.
- (38) Oliveri, G., Van Laake, L., Carissimo, C., Miette, C., Overvelde, J.T.B., (2019). Adaptive and Self-learning Robotic Matter. SES. St. Louis (US). *Presentation*.
- (37) Van Laake, L., Malek Kani, S., Overvelde, J.T.B., (2019). Responsive and Mechanically Programmable Sequential Actuation of Fluid-driven Soft Actuators. SES. St. Louis (US). *Presentation*.
- (36) van Laake, L., Overvelde, J.T.B., (2019). A Heartbeat for Soft Robots. Klein Colloquium @AMOLF. Amsterdam (NL). *Presentation*.
- (35) Oliveri, G., Van Laake, L., Carissimo, C., Miette, C., Overvelde, J.T.B., (2019). Decentralized Reinforced Learning of Emergent Behavior in Robotic Matter. Soft Matter Meeting. Utrecht (NL). *Soundbite presentation*.
- (34) Iniguez-Rabago, A., Overvelde, J.T.B., (2019). Boundary Effects in Origami Tessellations with Bistable Folds. Soft Matter Meeting. Utrecht (NL). *Soundbite presentation*.
- (33) van Laake, L., Overvelde, J.T.B., (2019). A Heartbeat for Soft Robots. Soft Matter Meeting. Eindhoven, Netherlands (NL). *Soundbite presentation*.
- (32) Van Laake, L., Iniguez-Rabago, A., Oliveri, G., (2019). Soft Robotics Research at AMOLF. Springboard 2019 @AUC. Amsterdam (NL). *Invited presentation*.
- (31) van Laake, L., Overvelde, J.T.B., (2019). Soft Fluidic Networks Driving Soft Robots. Workshop ESPCI-UVA-AMOLF. Amsterdam, Netherlands (NL). *Invited presentation*.
- (30) van Laake, L., Overvelde, J.T.B., (2019). Mechanically Programmable Sequential Actuation of Fluid-driven Soft Actuators. APS March Meeting. Boston (US). *Presentation*.
- (29) Iniguez-Rabago, A., Li, Y., Overvelde, J.T.B., (2019). Computational Design of Mechanically Multistable Prismatic Metamaterials. APS March Meeting. Boston (US). *Presentation*.
- (28) Oliveri, G., Overvelde, J.T.B., (2019) Inverse Design of Mechanical Metamaterials that Harness Instabilities. APS March Meeting. Boston (US). *Presentation*.
- (27) Oliveri, G., Overvelde, J.T.B., (2019) Inverse Design of Mechanical Metamaterials that Harness Instabilities. Physics@Veldhoven. Veldhoven (NL). *Poster*.
- (26) Oliveri, G., Overvelde, J.T.B., (2018). Mechanical Metamaterials: Shape Matters. Future Materials - Koers Lustrum Talks 2018. Eindhoven (NL). *Invited presentation*.
- (25) Oliveri, G., Overvelde, J.T.B., (2018) Inverse design of mechanical metamaterials that harness instabilities. SES. Madrid (AU). *Presentation*.
- (24) Iniguez-Rabago, A., Li, Y., Overvelde, J.T.B., (2018). Finding the Mechanically Stable States of Prismatic Architected Materials. Solvay. Brussel, (BE). *Presentation*.
- (23) Oliveri, G., Overvelde, J.T.B., (2018) Reprogramming the elastic properties of mechanical metamaterials by amplifying imperfections. Solvay. Brussel, (BE). *Presentation*.
- (22) Iniguez-Rabago, A., Li, Y., Overvelde, J.T.B., (2018). Finding the Mechanically Stable States in Prismatic Architected Materials. Klein Colloquium @AMOLF. Amsterdam (NL). *Presentation*.
- (21) Iniguez-Rabago, A., Li, Y., Overvelde, J.T.B., (2018). Finding the Mechanically Stable States in Prismatic Architected Materials. APS March Meeting. Los Angeles (US). *Presentation*.
- (20) Oliveri, G., Overvelde, J.T.B., (2018) Reprogramming the Elastic Properties of Mechanical Metamaterials by Amplifying Imperfections. APS March Meeting. Los Angeles (US). *Presentation*.
- (19) Iniguez-Rabago, A., Li, Y., Overvelde, J.T.B., (2017). Finding the Mechanically Stable States in Prismatic Architected Materials. Physics@Veldhoven. Veldhoven (NL). *Poster*. [top three in both categories]
- (18) Iniguez-Rabago, A., Li, Y., Overvelde, J.T.B., (2017). Finding the Mechanically Stable States in Prismatic Architected Materials. Soft Matter Meeting. Enschede (NL). *Soundbite presentation*.
- (17) Oliveri, G., Overvelde, J.T.B., (2017) Reprogramming the Elastic Properties of Mechanical Metamaterials by Amplifying Imperfections. Soft Matter Meeting. Enschede (NL). *Soundbite presentation*.

- (16) **Overvelde, J.T.B.**, Weaver, J., Hoberman C., Bertoldi, K., (2017) Rational Design of Reconfigurable Architected Materials. Metamaterials Conference, Marseille (AU). *Presentation*.
- (15) **Overvelde, J.T.B.**, Weaver, J., Hoberman C., Bertoldi, K., (2017). Rational Design of Reconfigurable Prismatic Architected Materials. American Physical Society Meeting. New Orleans (US). *Presentation*.
- (14) **Overvelde, J.T.B.**, Dykstra, D.M.J., de Rooij, R., Weaver, J., Bertoldi, K., (2017). Tension Instability in a thick elastic body. American Physical Society Meeting, New Orleans (US). *Presentation*.
- (13) **Oliveri, G., Overvelde, J.T.B.**, (2017). Reprogramming the Elastic Properties of Mechanical Metamaterials by Amplifying Imperfections. ICMS Complexity Science Winter School, Eindhoven (NL). *Poster*.
- (12) **Overvelde, J.T.B.**, Dykstra, D.M.J., de Rooij, R., Weaver, J., Bertoldi, K., (2016). Tensile Instability in a Thick Elastic Body. Soft Matter Meeting (NL). *Soundbite Presentation*.
- (11) **Overvelde, J.T.B.**, de Jong, T.A., Becerra, S.A., Shevchenko, Y., Whitesides, G.M., Weaver, J., Hoberman, C., Bertoldi, K., (2015). Transformable Origami-inspired Prismatic Metamaterials. Wyss retreat. Boston (US). *Movie and Demo*.
- (10) **Overvelde, J.T.B.**, Bertoldi, K., (2015). Amplifying the Response of Soft Actuators by Harnessing Instability. New England Workshop on the Mechanics of Materials and Structures. Boston (US). *Movie*.
- (9) **Overvelde, J.T.B.**, Kloek, T., D’haen J., Bertoldi, K., (2015). Harnessing Instability in Soft Actuators. AMOLF Designer Matter Workshop International Mechanical Engineering Conference. Amsterdam (NL). *Presentation*.
- (8) **Overvelde, J.T.B.**, de Jong, T.A., Weaver, J., Hoberman, C., Bertoldi, K., (2015). Actuated Origami-like Structures with Tunable Volume and Stiffness. APS March Meeting. San Antonio (US). *Presentation*.
- (7) **Overvelde, J.T.B.**, Kloek, T., D’haen J., Bertoldi, K., (2014). Harnessing Instability in Soft Actuators. ASME International Mechanical Engineering Conference. Montréal, CA. *Presentation*.
- (6) **Overvelde, J.T.B.**, Bertoldi, K., (2013). Putting Soft Sensors to the Test. New England Workshop on the Mechanics of Materials and Structures. Amherst (US). *Movie*.
- (5) **Overvelde, J.T.B.**, Bertoldi, K., (2013). Topology Optimization of Inflatable Stretchable Structures. ASME International Mechanical Engineering Conference. San Diego (US). *Presentation*.
- (4) **Overvelde, J.T.B.**, Shan, S., Bertoldi, K., (2012). Compaction Through Buckling in 2D Periodic, Soft and Porous Structures: Effect of Pore Shape. New England Workshop on the Mechanics of Materials and Structures. Providence (US). *Movie*.
- (3) **Overvelde, J.T.B.**, Langelaar, M., Keulen, F. van, (2012). The Moving Node Approach in Topology Optimization - An Exploration to a Flow-inspired Meshless Method-based Topology Optimization Method. New England Workshop on the Mechanics of Materials and Structures. Providence (US). *Poster*.
- (2) **Overvelde, J.T.B.**, Shan, S., Bertoldi, K., (2012). Non-linear Response of Soft Porous Structures: Effect of Pore Shape on their Response. Society of Engineering Science – 49th Annual Technical Meeting. Atlanta (US). *Presentation*.
- (1) **Overvelde, J.T.B.**, Langelaar, M., Keulen, F. van (2012). Influence of the Nodal Distribution on Element-Free Galerkin Accuracy in a Topology Optimization Context. European Congress on Computational Methods in Applied Sciences and Engineering. Vienna (AU). *Presentation*.

SELECTED MEDIA COVERAGE

- (63) Kluin, J., (2023) “Een zacht implanteerbaar robothart voor mensen met ernstig hartfalen.” BNR Radio 11 July [\[web\]](#)
- (62) Schenk, Dorine. (2022) “Dode spin begint nieuw leven als mechanische robotgrijper.” Het Parool 4 August. [\[web\]](#)
- (61) Schenk, Dorine. (2022) “Sputterende Ketchupfles laat zachte robot bewegen en reageren.” New Scientists 13 July. [\[web\]](#)
- (60) Van Laake, L.C., (2022) “Zachte Robots Gebaseerd op een Sputterende Ketchupfles.” BNR Radio 11 July. [\[web\]](#)
- (59) Editors. (2022) “Zachte Robot Beweegt Dankzij Ventiel Ketchupfles.”, De Ingenieur 11 July. [\[web\]](#)
- (58) Snellink, Marjolein. (2022) “Soft Hardware.” NWO Resultaat 24 Januari. [\[web\]](#)

- (57) Elisabeth van Nimwegen. (2021) “Van een chipszak tot een Nobelprijs voor softe robotica”, Atlas NTR 3 November. [\[web\]](#)
- (56) Jordan Golson. (2021) “Five lines of code could change the way we think about AI.” inverse.com 12 May. [\[web\]](#)
- (55) John timmer. (2021) “Programming a robot to teach itself how to move.” arstechnica.com 11 May. [\[web\]](#)
- (54) Karlien Meinders. (2021) “Zo simple kan een autonoom en zelflerend robotje zijn.” BNR Radio 11 May. [\[web\]](#)
- (53) Jim Heirbaut. (2021) “Eenvoudige robotjes leren onbewust samenwerken.” De Ingenieur 10 May. [\[web\]](#)
- (52) Dijk, Pancras. (2020) “Als ideeën beginnen te stromen.” De Ingenieur 12 November. [\[web\]](#)[\[web\]](#)
- (51) Delbert, Caroline. (2020) “Morphing Materials.” Scientific American April issue. [\[web\]](#)
- (50) Mandemaker, Arnold. (2020) “Robothart moet levens redden.” Eindhovens Dagblad 4 February. [\[web\]](#)
- (49) Burgess, Kaya. (2020) “Beat that: robotic heart aims to win competition for £30m grant.” The Times 23 January. [\[pdf\]](#) [\[web\]](#)
- (48) Bawden, Tom. (2020) “Revolutionary wireless ‘hybrid heart’ prototype for humans could be ready by 2028.” The I 23 January. [\[pdf\]](#) [\[web\]](#)
- (47) Bagot, Martin. (2020) “World’s first totally robotic heart will end need for transplants in 10 years.” The Mirror 23 January. [\[pdf\]](#) [\[web\]](#)
- (46) Knapton, Sarah. (2020) “Robo-heart could solve organ transplant crisis.” The Telegraph 23 January. [\[pdf\]](#) [\[web\]](#)
- (45) Spencer, Ben. (2020) “Soft robotic heart that uses synthetic material combined with layer of lab-grown human cells could put an end to human transplants by 2028.” The Daily Mail 23 January. [\[pdf\]](#) [\[web\]](#)
- (44) Bagot, Martin. (2020) “Roboheart: Professor hopes save thousands of lives with world’s first ‘hybrid organ’ by 2028.” The Express 23 January. [\[pdf\]](#)
- (43) Howe, Nick and Bundell, Shamini. (2019) “Podcast: A rapid, multi-material 3D printer, and a bacterium’s role in alcoholic hepatitis” Nature Podcast 13 November. [\[web\]](#)
- (42) Noordermeer, Barbara. (2019) “Studeren in de VS? Deze Nederlanders vertellen hoe ze Harvard binnenkwamen” Intermediair 1 August. [\[web\]](#)
- (41) Grob, Bart. (2018) “Het zachte robothart van Bas.” De Vrolijke Frankenstein 16 March.
- (40) Woo, Marcus. (2018) “Finding Future Tech in Ancient Art.” Nova Next 24 January. [\[web\]](#)
- (39) Overvelde, Bas. (2017) “Natuurkundige Bas Overvelde gaat het bouwen: een robotboom die tot bloei komt waar je bij staat.” Trouw 11 November. [\[web\]](#)
- (38) Waterval, Dirk. (2017) “Programmeerbare Metamaterialen” Quantum Universe 19 September. [\[web\]](#)
- (37) Van Calmthout, Martijn. (2017) “Aan tafel met Frankenstein - De gemaakte natuur.” Talk show Museum Boerhaave - Nacht van Kunst en Kennis 16 September.
- (36) Visscher, Marc-Robin. (2017) “Zacht robotisch kunsthart in de maak.” Radio show NPO1 Nieuws en Co 4 August. [\[web\]](#)
- (35) Ikin, Harm. (2017) “Toekomstmaterialen.” Hypothese 12 May. [\[pdf\]](#)
- (34) Van Calmthout, Martijn. (2017) “Hogere knutselkunde.” De Volkskrant 11 March. [\[web\]](#)[\[web\]](#)
- (33) Beekhuis, Mark. (2016) “Een origami-materiaal dat geluid verandert.” Radio show BNR Wetenschap vandaag 28 November. [\[web\]](#)
- (32) Karhof, Joost. (2016) “Wetenschappers adopteren Origami.” Radio show NPO1 Nieuws en Co 4 November. [\[web\]](#)
- (31) Vives, Francois-Xavier. (2016) “The Origami Code.” Documentary at Inscience Festival 2-6 November.
- (30) Aan de Brugh, Marcel. (2016) “Octopus als Robot.” NRC Handelsblad and NRC Next 3 September. [\[pdf\]](#) [\[pdf\]](#)
- (29) Van Kasteren, Joost. (2016) “Dichte muur krijgt gaten met een keertje vouwen.” NRC Handelsblad 16 April. [\[pdf\]](#)

- (28) Cookson, Clive. (2016) “Origami comes into the tech fold.” Financial Times 26 March. [\[pdf\]](#)
- (27) Hansman, Heather. (2016) “A New Material Could Make Medical Devices That Expand and Collapse.” Smithsonian 18 March. [\[web\]](#)
- (26) Joosten, Carla. (2016) “Zachte Robotica.” Elsevier 17 March. [\[pdf\]](#)
- (25) Knapton, Sarah. (2016) “Bizarre shape-shifting material invented by Harvard.” The Telegraph 11 March. [\[web\]](#)
- (24) Web editor (2016) “Researchers design versatile shapeshifting material.” ResearchGate 11 March.
- (23) Ceurstemont, Sandrine. (2016) “Shape-shifting matter could let houses crumple themselves away.” New Scientist 11 March. [\[web\]](#)
- (22) Reader, Ruth. (2016) “Researchers Have Created a Shapeshifting Material Inspired by Origami.” Mic 11 March. [\[web\]](#)
- (21) Web editor (2016) “Harvard team develops origami-inspired 3D structural material.” The Engineer 11 March.
- (20) Wassink, Jos. (2016) “Transforming materials.” DELTA 11 March. [\[web\]](#)
- (19) Burrows, Leah. (2016) “Transforming materials.” Harvard News and Views 11 March. [\[web\]](#)
- (18) Web editor (2015) “Delft Students Help Make More Dexterous Robots.” TU Delft Robotics Institute 27 August.
- (17) Edelman, Peter. (2015) “Niet-lineair gedrag handig gebruikt in kunstmatige spier.” Mechatronica & Machinebouw 21 August. [\[web\]](#)
- (16) Wassink, Jos. (2015) “Ballooning muscles for robots.” DELTA 20 August. [\[web\]](#)
- (15) Editor (2015) “Soft actuator could remove need for robotic tethers.” The Engineer 18 August.
- (14) Burrows, Leah. (2015) “Controlling the uncontrollable.” Harvard News and Views 17 August. [\[web\]](#)
- (13) Wright, Katherine. (2015) “Runaway buckling.” APS Physics 21 July. [\[web\]](#)
- (12) Zegers, Gabby. (2015) “Metamaterial undermines 250-year-old construction principles.” FOM 21 July.
- (11) Morad, Renee. (2015) “Jumping, Froglike Robot Takes a Big Leap Forward.” Robotics, Discovery 9 July.
- (10) Ackerman, Evan. (2015) “3D-Printed Explosive Jumping Robot Combines Firm and Squishy Parts.” IEEE Spectrum, 9 July. [\[web\]](#)
- (9) Burrows, Leah. (2015) “Harvard Researchers Create Jumping Soft Robot Using 3-D Printer.” Harvard Gazette 9 July. [\[web\]](#)
- (8) Feltman, Rachel. (2015) “This Jumping, Squishy Robot Looks Like a Tiny UFO.” Speaking of Science, The Washington Post 9 July. [\[web\]](#)
- (7) Herkewitz, William. (2015) “Nearly Unbreakable Soft Robot Ignites Explosions to Jump.” New Technology, Popular Mechanics 9 July. [\[web\]](#)
- (6) Ball, Philip. (2014) “Soft-hearted Robots.” News and Views, Nature Materials Vol. 13 April. [\[pdf\]](#)
- (5) Martiradonna, Luigi. (2014) “Heart Twists.” Research Highlight, Nature Materials Vol. 13 January. [\[pdf\]](#)
- (4) Aan de Brugh, Marcel. (2014) “Een nieuwe hartkamer van zachte kunststof.” NRC Handelsblad 28 February. [\[pdf\]](#)
- (3) Kusek, Kristen. (2014), “Artificial muscles do the twist.” Wyss Institute 26 February. [\[web\]](#)
- (2) Bosman, Annemieke. (2013) “Vliegende Hollander.” Transfer Magazine, 4. [\[pdf\]](#)
- (1) Elshof, Loes. (2009) “Excellence Program.” TU Delft. [\[video\]](#)

DOCUMENTARIES & EXHIBITIONS

- (13) “Zacht robothart.” (2024), documentary by NTR Focus, aired on 14 March.
- (12) “De Makerij” (Dec 2023), biomimicry workshop and exhibition at NEMO, Amsterdam (NL).
- (11) “Soft Circuits Toolkit” (Oct 2023), exhibition at Dutch Design Week, Eindhoven (NL).
- (10) “Soft Circuits Toolkit” (Sep 2023), exhibition at Maker Faire (*Nominated for the Innovation Award*), Eindhoven (NL).
- (9) “Soft Robotics” (May 2022), demonstration at NWO Teknowledgy festival, Utrecht (NL).

- (8) “Designing with Mathemagic” (Feb 2020), workshop at Amsterdam University of Applied Sciences, Amsterdam (NL).
- (7) “Bouw een wiskundige figuur” (Feb 2019), workshop and exhibit at NEMO, Amsterdam (NL).
- (6) “RainMaker” (Sep 2018), exhibition at FabLearn and Maker Faire (*Winner of the Maker of Merit Award*), Eindhoven (NL).
- (5) “Frankie - The artificial starfish” (Mar 2018 - Oct 2018), exhibition at Rijksmuseum Boerhaave, Leiden (NL)
- (4) “Edge of Chaos” (Dec 2017 - Jan 2019), exhibition on world tour at (WoeLab in Lomé (TG); La Gaité Lyrique in Paris (FR); Cinekid in Amsterdam (NL); KIKK Festival in Namur (BE).
- (3) “Morphing Crystals” ((Dec 2017 - Present), exhibition at Rijksmuseum Boerhaave, Leiden (NL)
- (2) “10 Degrees” (Sept 2016 - Jan 2017), exhibition at Le Laboratoire, Cambridge (US)
- (1) “The Origami Code” (2016), documentary by Francois-Xavier Vives, Dutch premiere INScience, aired NPO on 6 Nov. (min 32:49 - 35:01)

DISSERTATIONS

PhD

- (4) Van Laake, L., (2023) “A heartbeat for soft robots”. Eindhoven University of Technology.
- (3) Iniguez-Rabago, A., (2021) “Folding behavior of elastic origami metamaterials”. Eindhoven University of Technology.
- (2) Oliveri, G., (2021) “Designing Optimal Behaviour in Mechanical and Robotic Metamaterials.”. Eindhoven University of Technology.
- (1) Overvelde, J.T.B., (2016) “Embracing Compliance and Instabilities to Achieve Function in Mechanical Metamaterials and Devices”. Harvard University. [\[pdf\]](#)

MSc

- (18) Vaarkamp, O., (2024) “Thermopneumatics for energy-autonomous soft robots”, Eindhoven University of Technology
- (17) Van Riet, K., (2023) “Soft Circuits Toolkit: teaching soft circuits for soft robotics projects”, Eindhoven University of Technology
- (16) Bording, C., (2023) “Exploring shape-change for sustainability inspired by ecosystems”, Eindhoven University of Technology
- (15) Galassi, L., (2023) “Design of a soft actuation system based on mechanical instability for an artificial heart ventricle”, Scuola Superiore Sant’Anna,
- (14) Tait, J., (2022) “Dynamic DNA Origami: Harnessing Stochasticity for Synthetic Materials”. University of Edinburgh.
- (13) Collaris, M., (2022) “Macro sized elastomeric membrane oscillator towards fluidic control of soft robots”. Utrecht University.
- (12) Vara Fernandez, M., (2021) “Towards the fluidic control of a total soft artificial heart”. Groningen University.
- (11) Comoretto, A., (2021) “Design of soft buckling valve for pulsatile actuation of soft robots”.
- (10) De Vries, J., (2021) “Energy efficiency of soft pneumatic extension actuators”. Delft University.
- (9) Picella, S., (2021) “Distributed learning of emergent behaviour in 2D robotic matter”. Utrecht University.
- (8) Schomaker, H.A.H., (2020) “Towards minimal resource emergent control for dynamic locomotion tasks”. University of Amsterdam.
- (7) Carissimo, C., (2020) “On a soft robot and the emergence of behaviour”. University of Amsterdam.
- (6) Galiti, D., (2020) “Study of efficiency on pneumatic networks for an artificial heart”. Aristotle University of Thessaloniki.
- (5) Pasman, A. (2019) “Development of a volume adaptive soft robotic innersocket for transtibial prostheses”. University of Twente.
- (4) Jongerius, R., (2018) “Design and fabrication of a soft robotic fabric”. University of Twente.
- (3) Mula, D., (2017) “Simulation and design of a soft actuated metamaterials”. Ecole Centrale Paris, Polytechnic University of Valencia.

(2) Sabdadini, A. (2016). “From rigid extruded polyhedral to highly deformable multistable metamaterials: a numerical exploration”. Leiden University.

(1) Overvelde, J.T.B., (2012). “The Moving Node Approach in Topology Optimization - An Exploration to a Flow-inspired Meshless Method-based Topology Optimization Method”. Delft University of Technology. [\[pdf\]](#)

BSc

(4) Ashworth, S., (2020). “Efficient simulation of soft matter using coarsefinite element analysis”. Amsterdam University College.

(3) Dickhoff, L., (2018) “Self-learning of Crawling Gaits in Worm-inspired Robots”. Amsterdam University College.

(2) Ten Hooven, M., (2017) “Hybrid Heart: Soft pump design and proof of concept”. The Hague University of Applied Sciences.

(1) Li, Y., (2017) “Identifying meta-stable states in Origami-Inspired reconfigurable metamaterials”. Amsterdam University College.

PATENTS

(3) **Van Laake, L.C., Overvelde, J.T.B.**, (2022 & 2023), Fluidic Control of Soft Robots. *US provisional patent application.*

(2) Bertoldi, K., **Overvelde, J. T. B.**, Kloek, T., (2017). Amplifying the Response of Soft Fluidic Actuators By Harnessing Snap-through Instabilities. *US Patent Application*, US20170234337A1. [\[web\]](#)

(1) Bartlett, N., Weaver, J. C., Tolley, M. T., Wood, R. J., **Overvelde, J. T. B.**, Bertoldi, K., (2016). 3D Printed Hybrid robot. *Worldwide Patent Application*, WO2017058334A9. [\[web\]](#)

CONFERENCE PROCEEDINGS

(2) **Arfaee, M.**, Kluin, J., **Overvelde, J.T.B.**, (2023) Modeling the behavior of elastic pouch motors. *IEEE Robosoft conference Proceedings*

(1) Abramovic, V., Glynn, R., **Overvelde, J. T. B.**, (2018) Edge of Chaos: Towards intelligent architecture through distributed control systems based on Cellular Automata. *ACADIA conf. proc.*

JOURNAL PUBLICATIONS

Submitted

Kurt, E., Golestani, Y.M., Barmpoutsis, E., **Picella, S.**, Selinger, R.L.B., **Overvelde, J.T.B.***, Liu, D.*, Regulating airflow using hybrid LCN for soft pneumatic robots, *submitted*

Ducarme, P., Weber, B., Van Hecke, M.*, **Overvelde, J.T.B.***, Exotic mechanical properties enabled by counter-snapping instabilities, *submitted*

Comoretto, A., **Schomaker, M.**, **Overvelde, J.T.B.**, Physical synchronization of soft self-oscillating limbs for fast and autonomous locomotion, *submitted*

Picella, S., **Van Riet, C.M.**, **Overvelde, J.T.B.**, Pneumatic coding blocks enable programmability of electronics-free fluidic soft robots, *submitted*

Arfaee, M.*, Vis, A.*, Bartels, P.A.A., **Van Laake, L.C.**, Lorenzon, L., Ibrahim, D., Zrinscak, D., Smiths, A.I.P.M, Henseler, A., Cianchetti, M., Dankers, P.Y., Bouten, C.V.C. **Overvelde, J.T.B.**, Kluin, J., A soft robotic total artificial Hybrid Heart, *submitted*

Zrinscak, D., Lorenzon, L., De Chirico, C.M., Coluccia, F., De Luca, M., Maselli, M., **Overvelde, J.T.B.**, Cianchetti, M., Design of a soft robotic artificial cardiac matrix. *submitted*

Published

(34) **Van Laake, L.C., Overvelde, J.T.B.**, (2024) bio-inspired autonomy in soft robots. *Communications Materials*. [\[web\]](#)

(33) Mogas-Soldevila, L., Duro-Royo, J., Lizardo, D., Hollyer, G.G., Settens, C.M., Cox, J.M., **Overvelde, J.T.B.**, DiMasi, E., Bertoldi, K., Weaver, J.C., Oxman, N., (2024) Driving macro-scale transformations in three-dimensional-printed biopolymers through controlled induction of molecular anisotropy at the nanoscale. *Interface Focus*. [\[web\]](#)

- (32) Schomaker, M., Picella, S., Kung Garcia, A., Van Laake, L.C., Overvelde, J.T.B., (2024) Robust phototaxis by harnessing implicit communication in modular soft robotic systems *Advanced Functional Materials*. [\[web\]](#)
- (31) Paul, S., Overvelde, J.T.B., Hochhalter, J., Wang, P., (2024) Effects of void geometry on two-dimensional monolithic porous phononic crystals. *Applied Physics Letters*. [\[web\]](#)
- (30) Van Laake, L.C.,* Comoretto, A.,* Overvelde, J.T.B., (2024) On the coexistence of pressure regulation and oscillation modes in soft hysteretic valves. *Journal of Fluids and Structures*. [\[web\]](#)
- (29) Zou., S., Picella, S., De Vries, J., Kortman, V., Sakes, A., Overvelde, J.T.B., (2024) A Retrofit Sensing Strategy for Soft Fluidic Robots. *Nature Communications*. [\[movie\]](#) [\[AMOLF News\]](#) [\[web\]](#)
- (28) Wang, K., Overvelde, J.T.B., Engelbrecht, K, Bjork, R., Bahl, C.R.H., (2023) Predication for the volume compensation of 3D-printed large-deformation soft elastomeric elastocaloric regenerators. *Applied Physics Letters*[\[web\]](#)
- (27) Kropacek, J., Maslen, C., Van Dijk, B., Iniguez-Rabago, A., Overvelde, J.T.B., Zubov, A., Vrba, J., Cigler, P., Stepanek, F., Rehor, I., (2023) Hydrogel Microrobots Self-Assembled into Ordered Structures with Programmable Actuation. *Advanced Intelligent Systems*. [\[web\]](#)
- 26) Wilt, J.K., Overvelde, J.T.B., Coulais, C., (2023) Shape Memory Soft Robots with Yield Stress Fluids. *Advanced Intelligent Systems*. [\[web\]](#)
- (25) Iniguez-Rabago, A., Overvelde, J.T.B., (2022) From Rigid to Amorphous Folding Behavior in Origami-inspired Metamaterials With Bistable Hinges. *Extreme Mechanics Letters*. [\[web\]](#)
- (24) Van Laake, L.C., De Vries, J., Malek Kani, S., Overvelde, J.T.B., Kluin, J., (2022) A Fluidic Relaxation Oscillator for Reprogrammable Sequential Actuation in Soft Robots. *Matter*. [\[movie\]](#) [\[web\]](#)
- (23) Vis, A., Arfaee, M., Khambati, H., Slaughter, M.S., Gummert, J.F., Overvelde, J.T.B., Kluin, J., (2022) The Ongoing Quest for the first total artificial heart as destination therapy. *Nature Reviews Cardiology*. [\[Read only pdf\]](#) [\[web\]](#)
- (22) McClintock, H.D.*, Doshi, N.*, Iniguez-Rabago, A.*, Weaver, J.C., Jafferis, N.T., Jayaram, K., Wood, R.J., Overvelde, J.T.B., (2021) A Fabrication Strategy for Reconfigurable Millimeter-Scale Metamaterials. *Advanced Functional Materials*. [\[movie\]](#) [\[web\]](#)
- (21) Oliveri, G., Van Laake, L.C., Carissimo, C., Miette, C., Overvelde, J.T.B., Continuous learning of emergent behavior in robotic matter. *Proceedings of the National Academic of Sciences of the United States of America*. [\[Movie\]](#) [\[AMOLF News\]](#) [\[Inverse\]](#) [\[Ars Technica\]](#) [\[De Ingenieur\]](#) [\[BNR Radio\]](#) [\[web\]](#).
- (20) Röhrich, R., Oliveri, G., Kovaio, S., Tenner, V., Den Boef, A., Overvelde, J.T.B., Koenderink, A.F., (2020) Uncertainty estimation and design optimization of 2D diffraction-based overlay metrology targets. *ACS Photonics*. [\[web\]](#)
- (19) Oliveri, G., Overvelde, J.T.B., (2020) Inverse design of mechanical metamaterials that harness instabilities. *Advanced Functional Materials*. [\[web\]](#)
- (18) Iniguez-Rabago, A., Li, Y., Overvelde, J.T.B., (2019). Exploring Multistability in Prismatic Metamaterials through Local Actuation. *Nature Communications*. [\[AMOLF News\]](#) [\[Scientific American\]](#) [\[web\]](#)
- (17) Vasios, N., Gross, A. J., Soifer, S., Overvelde, J. T. B.,* Bertoldi, K.,* (2019). Harnessing Viscous Flow to Simplify the Actuation of Fluidic Soft Robots. *Soft Robotics*. [\[Harvard News\]](#) [\[web\]](#) [\[pdf\]](#)
- (16) Mulla, Y., Oliveri, G., Overvelde, J. T. B., Koenderink, G. H., (2018). Crack Initiation in Viscoelastic Materials. *PRL*. [\[web\]](#) [\[pdf\]](#)
- (15) Overvelde, J. T. B., Weaver, J., Hoberman, C., Bertoldi, K., (2017). Rational Design of Reconfigurable Prismatic Architected Materials. *Nature*. [\[De Volkskrant\]](#) [\[De Volkskrant online\]](#) [\[News & Views in Nature\]](#) [\[Harvard News\]](#) [\[web\]](#) [\[pdf\]](#)
- (14) Wang, Z., Galloway, K., Overvelde, J. T. B., Polygerinos, P., Bertoldi, K., Walsh, C. J., (2016). Interaction Forces of Soft Fiber Reinforced Bending Actuators. *IEEE/ASME Transactions on Mechatronics*. [\[web\]](#) [\[pdf\]](#)
- (13) Babae, S., Overvelde, J. T. B., Chen, E. R., Tournat, V., Bertoldi, K., (2016). Reconfigurable Origami-inspired Acoustic Waveguides. *Science Advances*. [\[web\]](#) [\[pdf\]](#)

- (12) **Overvelde, J. T. B.**, Dykstra, D. M. J., de Rooij, R., Weaver, J., Bertoldi, K., (2016). Tensile Instability in a Thick Elastic Body. *Physical Review Letters*. [[Harvard News](#)] [[web](#)] [[pdf](#)]
- (11) **Overvelde, J. T. B.**, de Jong, T. A., Becerra S. A., Shevchenko, Y., Whitesides, G. M., Weaver, J., Hoberman, C., Bertoldi, K., (2016). Actuated Three-dimensional Origami-like Metamaterial with Tunable Volume and Stiffness. *Nature Communications*. [[NRC Handelsblad](#)] [[Financial Times](#)] [[Tech Insider](#)] [[Daily Mail](#)] [[The Telegraph](#)] [[Smithsonian](#)] [[New Scientist](#)] [[Mic](#)] [[TU Delta](#)] [[Harvard News](#)] [[web](#)] [[pdf](#)]
- (10) Pouya, C., **Overvelde, J. T. B.**, Kolle, M., Aizenberg, J., Bertoldi, K., Weaver, J. C., Vukusic, P., (2015). Characterisation of a Mechanically Tuneable Gyroid Photonic Crystal Inspired by the Butterfly *Parides sesostris*. *Advanced Optical Materials*. [[web](#)] [[pdf](#)]
- (9) **Overvelde, J. T. B.**, Kloek, T., D'haen J. J. A., Bertoldi, K., (2015). Amplifying the Response of Soft Actuators by Harnessing Instability. *Proceedings of the National Academy of Sciences*. [[TU Delta](#)] [[Harvard News](#)] [[cover](#)] [[web](#)] [[pdf](#)]
- (8) Coulais, C., **Overvelde, J. T. B.**, Lubbers, L. A., Bertoldi, K., van Hecke, M., (2015). Discontinuous Buckling of Wide Beams and Metabeams. *Physical Review Letters*. [[web](#)] [[pdf](#)]
- (7) Bartlett, N. W., Tolley, M. T., **Overvelde, J. T. B.**, Weaver, J., Mosadegh, B., Bertoldi, K., Whitesides, G. M., Wood, R. J., (2015). A 3D Printed, Functionally Graded Soft Robot Powered by Combustion. *Science* [[The Washington Post](#)] [[Harvard News](#)] [[web](#)] [[pdf](#)]
- (6) Polygerinos, P., Galloway, K., **Overvelde, J. T. B.**, Wang, Z., Wood, R., Bertoldi, K., Walsh, C. J., (2014). Modeling of Soft Fiber-reinforced Bending Actuators. *IEEE Transactions on Robotics* [[web](#)] [[pdf](#)]
- (5) **Overvelde, J. T. B.**, Mengüç, Y., Polygerinos, P., Wang, Y., Wang, Z., Walsh, C. J., Wood, R. J., Bertoldi, K., (2014). Numerical Mechanical and Electrical Analysis of Soft Liquid-embedded Deformation Sensors. *Extreme Mechanics Letters*. [[web](#)] [[pdf](#)]
- (4) **Overvelde J. T. B.**, Bertoldi K. (2014). Relating Pore Shape to the Non-linear Response of Periodic Elastomeric Structures. *Journal of the Mechanics and Physics of Solids*. [[web](#)] [[pdf](#)]
- (3) Roche, E. T., Wohlfarth, R., **Overvelde, J. T. B.**, Vasilyev, N. V., Pigula, F.A., Mooney, D. J., Bertoldi, K., Walsh, C.J., (2014). Bioinspired Soft Actuated Materials. *Advanced Materials*. [[Research Highlight in Nature Materials](#)] [[News & Views in Nature Materials](#)] [[NRC Handelsblad](#)] [[Harvard News](#)] [[cover](#)] [[web](#)] [[pdf](#)]
- (2) **Overvelde J. T. B.**, Shan S., Bertoldi K. (2012). Compaction through Buckling in 2D Periodic, Soft and Porous Structures: Effect of Pore Shapes. *Advanced Materials*. [[web](#)] [[pdf](#)]
- (1) Li J., Shim J., **Overvelde J. T. B.**, Deng J., Zhu X., Bertoldi K., Yang S. (2012). Switching Photonic Membranes via Pattern Transformation and Shape Memory Effect. *Soft Matter*. [[web](#)] [[pdf](#)]

OTHER PUBLICATIONS (not peer-reviewed)

- (4) **Overvelde, J.T.B.**, (2021) Popping, Locking Robots. *Nature Materials*, 20, 1590-1591. [[web](#)] Invited News & Views article for the Nature Materials article of Kim et al. [[web](#)]
- (3) **Overvelde, J.T.B.**, (2019) How to print multi-material devices in one go. *Nature*, 575, 289-290. [[web](#)] [[podcast](#)] Invited News & Views article for the Nature article of Skylar-Scott et al. [[web](#)]
- (2) **Overvelde, J. T. B.**, (2018) Programmeerbare Metamaterialen. *NTvN*, 243-245.
- (1) **Overvelde, J. T. B.**, Weaver, J., Hoberman, C., Bertoldi, K., (2017) Reconfigurable Prismatic Architected Materials. *Active Matter*. Ed. Tibbits, S. Cambridge, 270-286. [[web](#)]