Danny **van der Haven**

Legal name: **Dingeman L.H. van der Haven**

Research Interests

Granular & Soft Materials, Advanced Manufacturing, Soil Mechanics
Computational Mechanics, Multiscale Modelling, Surrogate Models
X-ray Computed Microtomography, Mechanical Characterisation & Method Development

Academic Employment

2024–2025 **Postdoctoral Research Fellow** — **ETH Zurich**, Switzerland
Supervisor: Prof. David S. Kammer

Education

2021–2024 **PhD. Computational Methods in Materials Science** — **University of Cambridge**, the United Kingdom
Supervisor: Prof. James A. Elliott and Dr. Ioannis Fragkopoulos
Thesis: "On the Compaction of Granular Matter; Continuum and Discrete Numerical Modelling"
Committee: Prof. Catherine O'Sullivan and Prof. Stephen Millmore

2020–2021 **MPhil. Scientific Computing**, *Distinction* — **University of Cambridge**, the United Kingdom
Supervisor: Prof. James A. Elliott

2017–2020 **MSc. (Hons) Chemical Engineering**, *8.0/10.0* — **Eindhoven University of Technology**, the Netherlands
Supervisor: Prof. Ilja K. Voets

2014–2017 **BSc. (Hons) Biomedical Technology**, *Distinction* — **Eindhoven University of Technology**, the Netherlands
Supervisor: Prof. Ilja K. Voets

Other Appointments

2025 **Visiting Researcher** *(2 weeks, full-time)* — **Université Grenoble Alpes**, France

2022–2024 **Visiting Researcher** *(3x 2.5 months, full-time)* — **Novo Nordisk**, Denmark

2017–2020 **Start-up Co-founder** *(part-time)* — **Ares Analytics**, the Netherlands

2018–2019 **R&D Intern** *(5 months, full-time + 6 months, part-time)* — **BASF**, Germany

2017 **Research Intern** *(2 months, part-time)* — **Eindhoven University of Technology**, the Netherlands

Grants & Awards

2024	14.	**Early-Career Fellowship Collegium Helveticum**	$ 100 000
2022	13.	**Henry-Royce Equipment Grant**	$ 1 600
2020	12.	**Sint Geertruidsleen Scholarship**	$ 13 100
2018	11.	**Stimulation Fund Metropolitan Region Eindhoven**	$ 61 000
2017	10.	**ASML Makers Award**	100h consultancy + $ 3 300
	9.	**Thermo Fisher Scientific Award**	consultancy + $ 1 600
2016 +	1-8.	**Various travel grants, performance awards, and presentation prize**	$ 4 500

Publications

Google Scholar *ResearchGate* *ORCID*

2025 9. **Single-particle geometries of pharmaceutical powders from X-ray tomography; a simple and reliable sample preparation method**
Dingeman L.H. van der Haven, Jan L. Andreasen, Umair Zafar, Ioannis S. Fragkopoulos, James A. Elliott, *Tomography of Materials and Structures*, 8 (2025): 100067.

2024 8. **YADE - An extensible framework for the interactive simulation of multiscale, multiphase, and multiphysics discrete systems**
Vasileios Angelidakis, Katia Boschi, Karol Brzeziński, Robert A. Caulk, Bruno Chareyre, Carlos Andrés del Valle, Jérôme Duriez, Anton Gladky, Dingeman L.H. van der Haven, Janek Kozickik, Gerald Pekmezi, Luc Scholtès, Klaus Thoeni, *Computer Physics Communications*, 304 (2024): 109293.

7. **Tablet ejection: a systematic comparison between force, static friction, and kinetic friction**
Dingeman L.H. van der Haven, René Jensen, Maria Mikoroni, Umair Zafar, James A. Elliott, Ioannis S. Fragkopoulos, *International Journal of Pharmaceutics*, 661 (2024): 124369.

6. **Multi-component mixing and demixing model for predictive finite element modelling of pharmaceutical powder compaction**
Dingeman L.H. van der Haven, Maria Mikoroni, Andrew Megarry, Ioannis S. Fragkopoulos, James A. Elliott, *Advanced Powder Technology*, 35 (2024): 104513.

5. **Volume-interacting level set discrete element method: the porosity and angle of repose of aspherical, angular, and concave particles**
Dingeman L.H. van der Haven, Ioannis S. Fragkopoulos, James A. Elliott, *Powder Technology*, 433 (2024): 119295. (invited)

2023 4. **A physically consistent Discrete Element Method for arbitrary shapes using Volume-interacting Level Sets**
Dingeman L.H. van der Haven, Ioannis S. Fragkopoulos, James A. Elliott, *Computer Methods in Applied Mechanics and Engineering*, 414 (2023): 116165.

2022 3. **Predictive modelling of powder compaction for binary mixtures using the finite element method**
Dingeman L.H. van der Haven, Frederik H. Ørtoft, Kaisa Naelapää, Ioannis S. Fragkopoulos, James A. Elliott, *Powder Technology*, 403 (2022): 117381.

2. **Parameterless detection of liquid–liquid interfaces with sub-micron resolution in single-molecule localization microscopy**
Dingeman L.H. van der Haven, Roderick P. Tas, Pim van der Hoorn, Remco van der Hofstad, Ilja K. Voets, *Journal of Colloid and Interface Science*, 620 (2022): 356-364.

2021 1. **Closed-Form coexistence equation for phase separation of polymeric mixtures in dissipative particle dynamics**
Dingeman L.H. van der Haven, Stephan Köhler, Eduard Schreiner, Pieter J. in't Veld, *The Journal of Physical Chemistry B*, 125.27 (2021): 7485-7498.

Reviewed for *CMAME*, *Géotechnique*, *Powder Technology*, and *Journal of Geophysical Research*.

Teaching experience

2023–2024	**Materials Science Part IB – Supervisor**	University of Cambridge
	Computational Physics – Demonstrator *(2x)*	University of Cambridge
2023	**Model fitting & data analysis – Lecturer** *(2x)*	University of Cambridge
	From powder to pill, the importance of granular materials – Lecturer	University of Cambridge
2022–2024	**MSc. thesis supervisor** *(2x)*	University of Cambridge
2018–2020	**BSc. thesis supervisor** *(2x + 4x shared)*	Eindhoven University of Technology
2015–2018	**Student assistant & representative**	Eindhoven University of Technology

Trainings **Supervising Student Academic Writing** *(2 days)*, **Undergraduate Supervision** *(0.5 days)*

Media exposure

2025 5. **Getting Down to Fundamentals** *(forthcoming, link)* — Springer
Book contribution to "Granular Configurations: Sand, Materiality and Planetary Urbanization" edited by Michaela Büsse.

2024 4. **A hard tablet to crack** *(cover page, link)* — IOM3 Magazine
Magazine article on formulation problems in pharmaceutical powders for tablet compaction, sent to all members of the Institute of Materials, Minerals & Mining (IOM3) in the UK.

2023 3. **Data Diversity Podcast** *(link)* — Unlocking Research, University of Cambridge
A podcast discussing data sharing and sensitive data, recorded as part of my open-science advocacy at the University of Cambridge.

2022 2. **Counting dots to find the interface** *(link)* — ICMS Highlights, Eindhoven University of Technology
Article about our publication on the analysis of super-resolution microscopy data in the magazine of the Institute for Complex Molecular Systems (ICMS) at Eindhoven University of Technology.

2017 1. **TU/e-studenten willen verzuurde sportspieren vóór zijn** *(link)* — Eindhovens Dagblad
Article about our start-up in the regional newspaper. Translated title: "TU/e-students want to be ahead of acidified muscles during sports".

Invited Talks

2024 3. **Medelpharm** *(478 registrations, 182 attendees, link)* — Webinar
"Measuring static and kinetic friction in routine compaction cycles and their implications for formulation development"

2023 2. **Dassault Systemes - BIOVIA** *(34 attendees)* — Webinar
"Numerical modeling of the compaction of pharmaceutical powders using DEM and FEM"

2022 1. **NAFEMS** — Conference
"An accurate finite-element representation of pharmaceutical powder compaction"

Conference Talks & Posters

2025 15. **DEM10** *(accepted, forthcoming)* — Talk
"Branched Coupling of Representative Volume Elements; fast hierarchical FEM-DEM simulations"

2024 14. **Granular Matter Gordon Research Conference** — Poster
"Direct measurement and simulation of single-particle shapes of pharmaceutical powders in the micro- to millimetre size regime"

13. **Granular Matter Gordon Research Seminar** — Poster
"Simulating arbitrarily complex shapes using the volume-interacting level-set discrete element method"

12. **Compaction Simulation Forum** — Talk
"Single-particle characterization of powders for direct use in DEM simulations"
Additionally, invited keynote by Prof. James Elliott based entirely on my work.

11. **ON-DEM Opening Conference** — Talk
"A comprehensive framework for obtaining particle shapes for DEM"

2023 10. **Lennard-Jones Center showcase day** — Talk
"The importance of particle shape in granular matter; an efficient method for simulating arbitrarily shaped particles"

9. **International Congress on Particle Technology (Partec)** — Talk
"Measuring the elasticity of porous tablets for modeling direct powder compression"

8. **DEM9** — Talk
"Modelling Complex Particle Shapes with the Volume-interacting Level-Set Discrete Element Method"

7. **International Granulation Workshop** — Talk & Poster
"Volume-interacting Level Set Discrete Element Method: the Angle of Repose of Angular and Concave Particles"

6. **Armourers & Brasiers' Cambridge Forum** Talk
   "Going against the grain; unmixing powders"
5. **Data Champion Forum** Talk
   "Introduction to sensitive data"
4. **Compaction Simulation Forum** Talk
   "Tablet ejection: a systematic comparison between force, static friction, and kinetic friction"
3. **Edwards Centre lent term meeting** Talk
   "Detecting liquid-liquid interfaces in situ with sub-micron resolution"

2022

2. **Compaction Simulation Forum** Talk
   "Predictive modeling of powder compaction for mixtures using the finite element method"
1. **9th World Congress on Particle Technology** Talk
   "Simulating the compaction of arbitrarily shaped particles with Level-Set DEM"

Service

2024 **Lead Conference Organiser & Chair** *(link)* Collegium Helveticum
"Modelling of granular materials - Integrating data, computation, and physics"

Lead Organiser Consortium Meeting *(link)* European Cooperation in Science and Technology
A 2-day meeting of the Open Network on Discrete Element Method Simulations (ON-DEM, link).

2022–2024 **Open Data Representative** University of Cambridge

2021–2024 **President** Cambridge University Fujian White Crane Kung Fu & Tai Chi Society

2021 **Course Representative Scientific Computing** University of Cambridge

2015–2017 **Vice-chair & Founding Member of SensUs Organisation** *(link)* Eindhoven University of Technology
International student competition on biosensors

Professional memberships

2024–Now **Open Network on Discrete Element Method Simulations (ON-DEM)**

2023–Now **Cambridge Philosophical Society**

2022–Now **Institute of Materials, Minerals & Mining (IOM3)**

2020–Now **Institute of Physics (IOP)**