

DR. OSHRI BORGMAN



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- » **Tel Hai researcher page:** www.telhai.ac.il/en/dr-oshri-borgman-0
- » **Personal website:** Flow and Transport in Porous Media Group
- » **ResearchGate:** www.researchgate.net/profile/Oshri_Borgman

»»» Academic appointments

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| 2023 - | Senior lecturer | Tel-Hai College |
| 2022 - | Research group leader | Migal - Galilee Research Institute |

»»» Professional experience

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| 2019 - 2022 | Postdoctoral researcher | Géosciences Rennes, Université de Rennes |
| <ul style="list-style-type: none"> » Project title: Impact of structural heterogeneity on solute transport and mixing in un-saturated porous media » Supervisors: Dr. Yves Méheust and Dr. Tanguy Le Borgne | | |
| 2018 - 2019 | Postdoctoral researcher | Zuckerberg Institute for Water Research, Ben-Gurion University of the Negev |
| <ul style="list-style-type: none"> » Project title: Colloid facilitated transport of radionuclides through fractures in carbonate rocks: A micro-scale study » Supervisors: Prof. Noam Weisbrod and Prof. Avraham Be'er | | |

»»» Education

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|--|----------------------------------|---|
| 2012 - 2018 | Ph.D. | The Hebrew University of Jerusalem |
| <ul style="list-style-type: none"> » Thesis title: A pore-scale study of the effects of heterogeneity and deformation on fluid displacement in granular media » Supervisor: Dr. Ran Holtzman | | |
| 2009 - 2012 | M.Sc.Agr. magna cum laude | Soil and Water Sciences, The Hebrew University of Jerusalem |
| <ul style="list-style-type: none"> » Thesis title: Mobility of pharmaceutical compounds in an agricultural soil: Effects of biosolids application and solution chemistry » Supervisor: Prof. Benny Chefetz | | |
| 2006 - 2009 | B.Sc.Agr. magna cum laude | Soil and Water Sciences, The Hebrew University of Jerusalem |

Publications

- 2023 » Borgman, O., Turuban, R., Géraud, B., Le Borgne, T., & Méheust, Y. (2023). Solute Front Shear and Coalescence Control Concentration Gradient Dynamics in Porous Micromodel. *Geophysical Research Letters*, 50(5), e2022GL101407. <https://doi.org/10.1029/2022gl101407>
- 2022 » Borgman, O., Be'er, A., & Weisbrod, N. (2022). Direct visualization of colloid transport over natural heterogeneous and artificial smooth rock surfaces. *Journal of Contaminant Hydrology*, 251, 104067. <https://doi.org/10.1016/j.jconhyd.2022.104067>
- 2020 » Borgman, O., & Holtzman, R. (2020). Impact of matrix deformations on drying of granular materials. *International Journal of Heat and Mass Transfer*, 153, 119634. <https://doi.org/10.1016/j.ijheatmasstransfer.2020.119634>
- 2019 » Borgman, O., Darwent, T., Segre, E., Goehring, L., & Holtzman, R. (2019). Immiscible fluid displacement in porous media with spatially correlated particle sizes. *Advances in Water Resources*, 128, 158–167. <https://doi.org/10.1016/j.advwatres.2019.04.015>
- 2018 » Biswas, S., Fantinel, P., Borgman, O., Holtzman, R., & Goehring, L. (2018). Drying and percolation in correlated porous media. *Physical Review Fluids*, 3, 1–11. <https://doi.org/10.1103/physrevfluids.3.124307>
- 2017 » Borgman, O., Fantinel, P., Lühder, W., Goehring, L., & Holtzman, R. (2017). Impact of spatially correlated pore-scale heterogeneity on drying porous media. *Water Resources Research*, 53(7), 5645–5658. <https://doi.org/10.1002/2016wr020260>
- » Fantinel, P., Borgman, O., Holtzman, R., & Goehring, L. (2017). Drying in a microfluidic chip: Experiments and simulations. *Scientific Reports*, 7, 15572. <https://doi.org/10.1038/s41598-017-15718-6>
- 2013 » Borgman, O., & Chefetz, B. (2013). Combined effects of biosolids application and irrigation with reclaimed wastewater on transport of pharmaceutical compounds in arable soils. *Water Research*, 47, 3431–3443. <https://doi.org/10.1016/j.watres.2013.03.045>

Research grants

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| 2024–2028 | ISF - Israel Science Foundation | Total grant amount: NIS 960,000 |
| | » Project title: Solute transport, mixing, and chemical reactions in porous media: coupled effects of structural heterogeneity and fluid displacement | |
| 2024–2027 | BARD: US - Israel Binational Agricultural R&D Fund | Total grant amount: US\$ 300,000 |
| | » Project title: Tillage-induced soil structure and water saturation impact on porewater oxygen and redox conditions: Controls for nutrient availability and water quality | |
| | » Collaborator: Prof. Verónica Morales, UC Davis, California, USA | |
| 2024–2026 | Israeli Ministry of Energy and Infrastructure | Total grant amount: NIS 314,123 |
| | » Project title: Fluid Displacement in Porous Media: Factors Affecting Hydrogen Storage | |
| | » Collaborator: Dr. Yaniv Edery, Technion, Israel | |
| 2024–2026 | MIGAL internal call 2024 | Total grant amount: NIS 200,000 |

- ▶ **Project title:** Impact of bacterial biofilm matrix on water retention in heterogeneous porous media and its implication for plant growth under water-limited conditions
- ▶ Collaborator: Dr. Elhanan Tzipilevich, MIGAL, Israel

2019–2021

Marie Skłodowska-Curie Actions IF

Total grant amount: €196,707.84

- ▶ **Project title:** Impact of structural heterogeneity on solute transport and mixing in unsaturated porous media (UnsatPorMix – 843594)
- ▶ Supervisor: Yves Méheust | Mentor: Tanguy Le Borgne

Selected conference presentations

2024

Oshri Borgman, Francesco Gomez, Tanguy Le Borgne, and Yves Méheust

- ▶ Mixing-induced reactive transport experiments in heterogeneous and variably saturated porous media
- ▶ EGU General Assembly 2024, Vienna, Austria, *Oral presentation (online)*

2023

Borgman, O., Gomez, F., Le Borgne, T., and Méheust, Y.

- ▶ Impact of structural heterogeneity on fluid phase patterns in two-phase flow through two-dimensional porous micromodels
- ▶ InterPore 2023, Edinburgh, Scotland, UK, *Poster presentation*

Borgman, O., Gomez, F., Le Borgne, T., and Méheust, Y.

- ▶ Impact of structural heterogeneity on solute transport and mixing in unsaturated porous media: An experimental study
- ▶ EGU General Assembly 2023, Vienna, Austria, *Poster presentation*

2022

Oshri Borgman, Francesco Gomez, Tanguy Le Borgne, and Yves Méheust

- ▶ Impact of structural heterogeneity on solute transport and mixing in unsaturated porous media: An experimental study
- ▶ Israel Society of Soil Science Conference 2022, Rehovot, Israel, *Oral presentation*

Oshri Borgman, Francesco Gomez, Tanguy Le Borgne, and Yves Méheust

- ▶ Impact of structural heterogeneity on solute transport and mixing in unsaturated porous media: An experimental study
- ▶ EGU General Assembly 2022, Vienna, Austria, *Oral presentation*

2021

Oshri Borgman, Francesco Gomez, Tanguy Le Borgne, Yves Méheust

- ▶ Impact of heterogeneity on solute transport and mixing in unsaturated porous media: Experimental design and preliminary results
- ▶ 2021 Cargèse summer school on Flow and Transport in Porous and Fractured Media, Cargèse, France, *Poster presentation*

2020

Oshri Borgman, Avraham Be'er, and Noam Weisbrod

- ▶ Impact of surface heterogeneity on colloid transport over a natural fractured rock
- ▶ AGU Fall Meeting (virtual meeting), *Poster presentation (online)*

Oshri Borgman and Ran Holtzman

- ▶ Impact of matrix deformation on drying of granular materials
- ▶ Israel Society of Soil Science Annual Conference (virtual meeting), *Oral presentation (online)*

2019

Oshri Borgman, Avraham Be'er, and Noam Weisbrod

- ▶ Direct visualization of colloid transport and deposition in fractures of carbonate rock using fluorescent microscopy
- ▶ EGU General Assembly, Vienna, Austria, *Poster presentation*

- 2017 **Oshri Borgman** and Ran Holtzman
 » Impact of matrix deformations on drying of granular materials
 » Interpore–9th International Conference on Porous Media, Rotterdam, The Netherlands, *Poster presentation*
- 2016 **Oshri Borgman**, Paolo Fantinel, Lucas Goehring, and Ran Holtzman
 » Impact of spatial correlation and matrix deformation on drying granular material
 » Gordon Research Conference on Flow and Transport in Permeable media, Girona, Spain, *Poster presentation*
- Oshri Borgman**, Paolo Fantinel, Lucas Goehring, and Ran Holtzman
 » Impact of spatial correlation and matrix deformation on drying granular material
 » Gordon Research Seminar on Flow and Transport in Permeable media, Girona, Spain, *Oral presentation*
- 2015 **Oshri Borgman**, Paolo Fantinel, Lucas Goehring, and Ran Holtzman
 » The Impact of Pore-Scale Heterogeneity on Drying Porous Media
 » EGU General Assembly, Vienna, Austria, *Oral presentation*
- 2011 **Oshri Borgman** and Benny Chefetz
 » Effects of compost application and solution chemistry on leaching of pharmaceutical compounds in soil columns
 » Israel Soil Science Society Annual Conference, BIDR, Sde Boker, Israel, *Oral presentation*
- 2010 **Oshri Borgman** and Benny Chefetz
 » Behavior of pharmaceutical compounds in soils: effects of biosolids application
 » Israel Soil Science Society Annual Conference, Beit Dagan, Israel, *Poster presentation*

»» Teaching

The Faculty of Sciences and Technology, Tel-Hai College

- 2024 » Soil and water (with Dr. Oren Reichman)
 2024 » Numerical methods for water sciences

L3 Sciences de la Terre, OSUR Rennes

- 2022 » Mesures Hydrologiques et Géochimiques (with Dr. Maria Klepikova)

Cargèse summer school on Flow and Transport in Porous and Fractured Media

- 2021 » Practical course on millifluidic solute transport experiments (with Dr. Joaquín Jiménez-Martínez and Dr. Yves Méheust)

Soil and Water Sciences, The Hebrew University of Jerusalem

- 2015, 2017 » Advanced Soil Physics (Teaching assistant)
 2014–2018 » Hydraulic Laboratory on Flow in Conduits and Soil (Teaching assistant)
 2013–2018 » Physics of Soil Water (Teaching assistant)
 2010–2012 » Fundamentals of Soil Science (Teaching assistant)
 2009–2011 » Undergraduate physics courses (Teaching assistant)

»» Invited seminars

- 2024 Civil & environmental engineering, Technion, Haifa, Israel

Institute of Soil, Water & Environmental Sciences, Agricultural Research Organization, Beit Dagan, Israel

PoreLab lecture series, University of Oslo, Oslo, Norway

Zuckerberg Institute for Water Research, Jacob Blaustein Institutes for Desert Research, Ben-Gurion University of the Negev, Midreshet Ben-Gurion, Israel

2021 Soil & Water Sciences, The Robert H. Smith Faculty of Agriculture, Food and Environment, The Hebrew University of Jerusalem, Rehovot, Israel

MIGAL – Galilee Research Institute

2021 Porous Medium Tea Time Talk (YouTube link)

2020 Environmental Physics & Irrigation, Institute of Soil, Water & Environmental Sciences, Agricultural Research Organization, Beit Dagan, Israel

2018 Géosciences Rennes, Université de Rennes 1, Rennes, France

Department of Civil, Environmental & Geomatic Engineering, ETH Zürich, Zürich, Switzerland

School of Chemical Engineering & Analytical Science, The University of Manchester, Manchester, United Kingdom

»» Awards and fellowships

2018–2019 **Marcus Postdoctoral Fellowships in Water Sciences, Ben-Gurion University of the Negev**

» Fellowship amount: 105,000 ILS

2014–2016 **The Robert H. Smith Prizes for Excellence in Agriculture**

» Awarded amount: 30,000 ILS over three years

2014 **Israel Ministry of Science, Technology and Space grant for international training for PhD students**

» Granted amount: 7300 ILS

2010 **Israel Soil Science Society Annual Conference, Agricultural Research Organization, Beit Dagan**

» Winner of students' poster competition

»» Other activities

Organization of scientific meetings

2024 » Co-organizer of mini-symposium (MS06-B) *Interfacial phenomena across scales*, Interpore 2024, Qingdao, China

2024 » Co-convener of session HS 8.1.2 *Coupled transport, reactive processes and biological activity in soils, the vadose zone, and below*, EGU General Assembly, Vienna, Austria

- 2023 ▶ Co-organizer of mini-symposium (MS06-B) *Interfacial phenomena across scales*, Interpore 2023, Edinburgh, Scotland
- 2023 ▶ Co-convenor of session HS 8.2.1 *Innovative methods and new advances for understanding subsurface processes that couple fluid dynamics, solute transport, geochemical reactions and biological activity*, EGU General Assembly, Vienna, Austria
- 2022 ▶ Co-convenor of session HS 8.1.2 *Advances in coupled fluid dynamics, heat and solute transport, and (bio-)geochemical reactions in subsurface fractured and porous media: experiments, models and field observations*, EGU General Assembly, Vienna, Austria

Reviewer for journals

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- ▶ Advances in Water Resources, Water Resources Research, Proceedings of the Royal Society A, Drying Technology, Plant and Soil