Oshri Borgman – Curriculum Vitae

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Personal website: Flow and Transport in Porous Media Group
ResearchGate page: https://www.researchgate.net/profile/Oshri_Borgman

Academic appointments

Oct. 2023–present	**Senior lecturer**, Tel-Hai College
Nov. 2022–present	**Research group leader**, MIGAL – Galilee Research Institute

Professional experience

Sep. 2019–Sep. 2022	**Postdoctoral researcher**, Géosciences Rennes, Université de Rennes 1 **Project title:** Impact of structural heterogeneity on solute transport and mixing in unsaturated porous media Supervisors: Dr. Yves Méheust and Dr. Tanguy Le Borgne
Aug. 2018–Aug. 2019	**Postdoctoral researcher**, The Department of Environmental Hydrology and Microbiology, Zuckerberg Institute for Water Research, Jacob Blaustein Institutes for Desert Research, Ben-Gurion University of the Negev **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

2012–2018	**Ph.D.** The Department of Soil and Water Sciences, The Hebrew University of Jerusalem 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.** Soil and Water Sciences, The Hebrew University of Jerusalem *magna cum laude* 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.** Soil and Water Sciences, The Hebrew University of Jerusalem *magna cum laude*

Publications

Papers in peer-reviewed journals

8. Oshri Borgman, Régis Turuban, Baudouin Géraud, Tanguy Le Borgne, and Yves Méheust. Solute front shear and coalescence control concentration gradient dynamics in porous micromodel. *Geo-*

physical Research Letters, 50:e2022GL101407, 2023. doi: 10.1029/2022gl101407

7. Oshri Borgman, Avraham Be'er, and Noam Weisbrod. Direct visualization of colloid transport over natural heterogeneous and artificial smooth rock surfaces. *Journal of Contaminant Hydrology*, 251: 104067, 2022. ISSN 0169-7722. doi: 10.1016/J.JCONHYD.2022.104067. URL `https://linkinghub.elsevier.com/retrieve/pii/S0169772222001152`

6. Oshri Borgman and Ran Holtzman. Impact of matrix deformations on drying of granular materials. *International Journal of Heat and Mass Transfer*, 153:119634, 2020. doi: 10.1016/j.ijheatmasstransfer.2020.119634

5. Oshri Borgman, Thomas Darwent, Enrico Segre, Lucas Goehring, and Ran Holtzman. Immiscible fluid displacement in porous media with spatially correlated particle sizes. *Advances in Water Resources*, 128:158–167, 2019. doi: 10.1016/j.advwatres.2019.04.015

4. Soumyajyoti Biswas, Paolo Fantinel, Oshri Borgman, Ran Holtzman, and Lucas Goehring. Drying and percolation in correlated porous media. *Physical Review Fluids*, 3:124307, 2018. doi: 10.1103/PhysRevFluids.3.124307

3. Paolo Fantinel, Oshri Borgman, Ran Holtzman, and Lucas Goehring. Drying in a microfluidic chip: Experiments and simulations. *Scientific Reports*, 7:15572, 2017. doi: 10.1038/s41598-017-15718-6

2. Oshri Borgman, Paolo Fantinel, Wieland Lühder, Lucas Goehring, and Ran Holtzman. Impact of spatially correlated pore-scale heterogeneity on drying porous media. *Water Resources Research*, 53 (7):5645–5658, 2017. doi: 10.1002/2016WR020260

1. Oshri Borgman and Benny Chefetz. Combined effects of biosolids application and irrigation with reclaimed wastewater on transport of pharmaceutical compounds in arable soils. *Water Research*, 47 (10):3443–3431, 2013. doi: 10.1016/j.watres.2013.03.045

Research grants

2024-2026 Israeli Ministry of Energy and Infrastructure
Project title: Fluid Displacement in Porous Media: Factors Affecting Hydrogen Storage
Total grant amount: NIS 314,123
Collaborator: Dr. Yaniv Edery, Technion, Israel

2024-2026 MIGAL internal call 2024
Project title: Impact of bacterial biofilm matrix on water retention in heterogeneous porous media and its implication for plant growth under water-limited conditions
Total grant amount: NIS 200,000
Collaborator: Dr. Elhanan Tzipilevich, MIGAL, Israel

2019-2021 Marie Skłodowska-Curie Actions Individual Fellowship 2018, European Commission
Project title: Impact of structural heterogeneity on solute transport and mixing in unsaturated porous media (UnsatPorMix – 843594)
Supervisor: Yves Méheust | Mentor: Tanguy Le Borgne
Total grant amount: €196,707.84

Conferences

Presentations

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

2022 **Oshri Borgman**, Régis Turuban, Baudouin Géraud, Tanguy Le Borgne, and Yves Méheust, *Impact of flow rate on chemical gradients and mixing dynamics in porous media*, InterPore 2022, Abu Dhabi, United Arab Emirates

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*, EGU General Assembly 2022, Vienna, Austria

2021 **Oshri Borgman**, Régis Turuban, Baudouin Géraud, Tanguy Le Borgne, and Yves Méheust, *Impact of flow conditions on pore-scale solute mixing: experiments in heterogeneous 2D porous media* (vPico), EGU General Assembly 2021 (virtual meeting)

2020 **Oshri Borgman** and Ran Holtzman, *Impact of matrix deformation on drying of granular materials*, Israel Society of Soil Science Annual Conference (virtual meeting)

2016 **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

Oshri Borgman, Paolo Fantinel, Wieland Lühder, Lucas Goehring, and Ran Holtzman, *Drying in spatially correlated porous media*, Israel Soil Science Society Annual Conference, Qatzrin, Israel

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

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

Oshri Borgman and Benny Chefetz, *Behavior of pharmaceutical compounds in soils: effects of biosolids application and soil solution chemistry*, 8th Conference on Active Research by Environmental Science Students, Weizmann Institute of Science, Rehovot, Israel

Posters

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, 22–25 May 2023

2023 **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, 24–28 Apr 2023, EGU23-11028, `https://doi.org/10.5194/egusphere-egu23-11028`

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

2020 **Oshri Borgman**, Avraham Be'er, and Noam Weisbrod, *Impact of surface heterogeneity on colloid transport over a natural fractured rock*, AGU Fall Meeting 2020 (virtual meeting)

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

2018 **Oshri Borgman**, Enrico Segre and Ran Holtzman, *Impact of structured heterogeneity on immiscible displacement in porous media*, Israeli Association for Water Resources Conference, Neve Ilan, Israel

2017 **Oshri Borgman** and Ran Holtzman, *Impact of matrix deformations on drying of granular materials*, Interpore–9th International Conference on Porous Media & Annual Meeting, Rotterdam, The Netherlands

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

2015 **Oshri Borgman**, Paolo Fantinel, Lucas Goehring, and Ran Holtzman, *The Impact of Pore-Scale Heterogeneity on Drying Porous Media: Pore-Network Model Simulations*, Interpore–7th International Conference on Porous Media & Annual Meeting, Padua, Italy

2014 **Oshri Borgman**, Paolo Fantinel, Lucas Goehring, and Ran Holtzman, *The impact of pore-scale heterogeneity on drying porous media*, Israel Soil Science Society Annual Conference, Agricultural Research Organisation, Beit Dagan, Israel

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

Invited seminars

11/2021	Soil and Water Sciences, The Robert H. Smith Faculty of Agriculture, Food and Environment, The Hebrew University of Jerusalem
10/2021	MIGAL Galilee Research Institute
02/2021	Porous Medium Tea Time Talk (YouTube link)
07/2020	Environmental Physics and Irrigation, Institute of Soil, Water and Environmental Sciences, Agricultural Research Organization, Israel
02/2018	Géosciences Rennes, Université de Rennes 1, Rennes, France Department of Civil, Environmental and Geomatic Engineering, ETH Zürich, Zürich, Switzerland School of Chemical Engineering and 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 (equivalent to €25,000 or $28,000*)
2014-2016	The Robert H. Smith Prizes for Excellence in Agriculture *Awarded amount: 30,000 ILS over three years (equivalent to €7000 or $8000)*
2014	Israel Ministry of Science, Technology and Space grant for international training for PhD students *Granted amount: 7300 ILS (equivalent to €1700 or $2000)*
2014	Outstanding teaching assistant, The Faculty of Agriculture, Food and Environment, Rehovot 3rd place in students' poster competition, Israel Soil Science Society Annual Conference, Agricultural Research Organisation, Beit Dagan, Israel
2010	Winner of students' poster competition, Israel Soil Science Society Annual Conference, Agricultural Research Organization, Beit Dagan

Teaching

Tel-Hai College

2024	Soil and water (Bachelor program in Environmental Sciences) (with Dr. Oren Reichman)
2024	Numerical methods (Master's program in Water Sciences) (with Dr. Oren Reichman)

OSUR Rennes

2022	Mesures Hydrologiques et Géochimiques for L3 Sciences de la Terre (bachelor in Earth Sciences) (with Dr. Maria Klepikova)

2021 Cargèse summer school on Flow and Transport in Porous and Fractured Media

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

Teaching assistant at the Hebrew University of Jerusalem, Israel

Graduate-level courses

2015, 2017 Advanced Soil Physics

Undergraduate-level courses

2014-2018 Hydraulic Laboratory on Flow in Conduits and Soil
2013-2018 Physics of Soil Water
2010-2012 Fundamentals of Soil Science
2009-2011 Undergraduate physics courses

Other academic activities

Organization of scientific meetings

2023 Co-convener 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-convener 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
2016 Member of organizing committee and session chair, Water Research in Israel: Graduate Student Research Conference, The Technion, Haifa, Israel

Reviewer for journals

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