

Dr. Ran Holtzman—Curriculum Vitae

Lecturer (assistant professor)

The Department of Soil and Water Sciences

The Hebrew University of Jerusalem

Nationality: Israeli & American (dual)

Language proficiency: English & Hebrew native speaker, basic Spanish

h-index 13, with 584 citations (11, with 336 citations since 2014); ORCID: 0000-0003-0826-6826

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Research interests

Multiscale modeling of multiphase and reactive fluid flow in deformable porous media, emphasizing the collective effect of coupled pore-scale mechanisms on the overall response at larger scales. Interplay between hydrodynamics, matrix alteration due to biogeochemical processes and the emergence of preferential flow pathways affects the response of a porous system. I am particularly interested in the pore-scale origins of nonequilibrium—emergence of unstable, preferential pathways, hysteresis and rate-dependency. My research, which cuts across the interface of earth sciences, engineering and physics, is motivated by environmental and energy applications across scales, from filtration, desalinization or microfluidics to soil infiltration, evapotranspiration, contamination and remediation, sediment transport, or carbon geosequestration.

Education

2003-2008	PhD in Civil and Environmental Engineering, University of California, Berkeley.
2000-2003	MS in Agricultural Engineering—Water, Soil and Environmental Sciences, Technion, Israel.
1998-2000	BSc in Civil Engineering (<i>Cum laude</i>), Technion–Israel Institute of Technology.
1995-1998	BSc in Geological and Environmental Science (<i>Cum laude</i>), Ben-Gurion University, Israel.

Accreditations

2018	Accreditation of research and teaching (at the tenured associate professor level) of the Catalan University Quality Assurance Agency (AQU) , Spain*.
	*Formal assessment of research and teaching capabilities, required to undertake a professor position.
2017	Equivalence of foreign doctoral degree from Universitat Politècnica de Catalunya , Spain.
2001	Professional License in Civil Engineering (P.E.) , Israel.

Recent professional experience

2017-present	Visiting scientist , IDAEA–CSIC , Institute of Environmental Assessment and Water Research, Barcelona, Spain.
2012-2018	Lecturer (assistant prof.) , Soil and Water Sciences, The Hebrew University of Jerusalem.
2012	Visiting professor , Geophysics department, Stanford University.
2009-2011	Postdoctoral Associate , Civil and Environmental Engineering, Massachusetts Institute of Technology.
2003-2008	Graduate Research Assistant , Civil and Environmental Engineering, University of California, Berkeley.
2002-2003	Consultant, Civil Engineering , Agat Engineering Ltd , Israel.

Competitive grants (awarded as PI)

- 2013-2018 Fracturing induced by fluid invasion into granular media, *Israel Science Foundation*: **\$400,000**.
- 2015-2018 Economic Analysis of Biochar Agricultural Application in Arid Regions, *China-Israeli Intergovernmental Scientific and Technological Cooperation Project*, via *Israel Ministry of Agriculture*, Chief Scientist, with I. Kan (HUJI), and X. Lee (Institute of Geochemistry, Chinese Academy of Sciences, Guizhou): **\$360,000; \$120,000 to R. Holtzman**.
- 2016-2017 Experimental Study of Pockmark Formation: Flow and Geomechanics, *Ring Center for Interdisciplinary Environmental Research*, with E. Aharonov (HUJI): **\$25,000; \$12,500 to R. Holtzman**.
- 2016-2017 Microbial life on a leaf: The interplay between microbial colonization, water availability and wettability, *The Agriculture, Environment and Natural Resources Research Center*, Hebrew University, with N. Kashtan: **\$24,000; \$12,000 to R. Holtzman**.
- 2013-2017 Drying dynamics of deformable granular material: Pore-scale study, *Niedersachsen-Israel Research Cooperation Program*, with L. Goehring (Max Planck Institute for Dynamics and Self-Organization, Gottingen, Germany): **\$295,000; \$145,000 to R. Holtzman**.
- 2013-2015 Reactive fluids in deformable porous media: From pore-scale physics to geophysical applications, *BSF: USA-Israel Binational Science Foundation*, with T. Vanorio (Stanford University, USA): **\$75,000 total; \$75,000 to R. Holtzman**.
- 2012-2015 Dynamics of soil drying, *Young Scientist Award*, Hebrew University: **\$24,000**.
- 2013-2016 Drying of unconsolidated soils: The impact of particle displacements and deformation on water losses, *Israel Ministry of Agriculture and Rural Development*, Chief Scientist: **\$95,000**.

Fellowships, honors & awards

- 05/2018 **Accreditation of research** (tenured associate professor) of the **Catalan University Quality Assurance Agency (AQU)**.
- 06/2012 **Plenary speaker and discussion leader, Gordon Research Seminar** on Flow and Transport in Permeable Media, Switzerland.
- 03/2012 **Plenary speaker, Gordon Research Conference** on Natural Gas Hydrates, California.
- 2012 **Golda Meir Fellowship Lectureship Award** (Israel).
- 06/2010 **Discussion leader, Gordon Research Conference** on Natural Gas Hydrates, Maine.
- 12/2007 **Outstanding Student Paper Award, AGU Fall 2007 meeting**.
- 07/2007 **USACM Graduate Student Fellowship award**.
- 12/2006 **Outstanding Student Paper Award, AGU Fall 2006 meeting**.
- 2003-2005 **Jane Lewis Fellowship**, University of California, Berkeley.
- 2000-2001 **Grand Water Research Institute Excellence Scholarship**, Technion.
- 2000-2001 **Best Teaching Assistant Award**, Technion.
- 10/1999 **University President Excellence Award**, Technion.
- 03/1999 **Civil Engineering Dean Excellence Award**, Technion.
- 10/1998 **University President Excellence Award**, Technion.
- 03/1998 **Civil Engineering Dean Excellence Award**, Technion.
- 1997-1998 **Department Head Excellence Award**, Ben-Gurion University.
- 1996-1997 **Natural Sciences Dean Excellence Award**, Ben-Gurion University.
- 1995-1996 **Department Head Excellence Award**, Ben-Gurion University.

Teaching and mentoring

Supervision of master students

- 2015-2018 Inbar Vaaknin (MS): Experimental study of caprock failure caused by gas buoyancy.
- 2015-2017 Evyatar Cohen (MS): Impact of petrophysical properties on CO₂ geo-sequestration.

Supervision of doctoral students

2016-present	Roi Roded (PhD): Reactive transport in stressed, deformable porous media.
2013-2018	Oshri Borgman (PhD): Drying granular media: Pore-scale study.
2012-2018	Yonatan Ganot (PhD): Hydrological aspects of aquifer recharge by desalinated water.

Supervision of postdoctoral researchers

2013-2015	Xavier Paredes: Dissolution and compaction during reactive transport in carbonates.
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Courses taught as responsible lecturer

2013-present	Physics of soil water (joint undergraduate-graduate), The Hebrew University of Jerusalem (HUJI).
2014-present	Advanced Soil Physics (graduate), HUJI.
2014-present	Mathematical Programming in Matlab (joint undergraduate-graduate), HUJI.
2015-2016	Graduate student seminar (graduate), HUJI.

Courses taught as teaching assistant

2005-2006	Groundwater and seepage (undergraduate), UC Berkeley.
2000-2002	Fluid mechanics (undergraduate), Technion-Israel Institute of Technology.
2000-2001	Earth-moving equipment and systems (undergraduate), Technion.
1999-2002	Engineering geology (undergraduate), Technion.

Professional service

Thesis committee member

2018-present	Guillermo Casas González (PhD), Universitat Politècnica de Catalunya (UPC), Spain.
2017-present	Eitan Cohen (PhD), Technion-Israel Institute of Technology.
2014-present	Yinon Yechezkel (PhD), Weizmann Institute of Science, Israel.
2014-present	Naaran Bryant (PhD), Hebrew University of Jerusalem.
2013-2014	Yael Tobias (MS), Technion-Israel Institute of Technology.
2012-2014	Yehuda Halevi (MS), Hebrew University of Jerusalem.

Reviewer for journals

Advances in Water Research; Chemical Engineering Science; Energy & Fuels; International Journal of Heat & Mass Transfer; International Journal of Oil, Gas & Coal Technology; Journal of Colloid & Interface Science; Journal of Fluid Mechanics; Journal of Geophysical Research-Solid Earth; Transport in Porous Media; Physical Review E; Physical Review Letters.

Other academic activities

2018	Judge for Outstanding Student Poster and PICO (OSPP) award, EGU General Assembly, Vienna, Austria, 2018.
2015-2016	Session Chair and Convener, Fall Meeting, AGU, San-Francisco, CA.
2015-2016	Organizer, department seminar series, Soil and Water Sciences, The Hebrew University of Jerusalem.
2014-2015	Panelist and Reviewer, Binational (US-Israel) Agricultural Research & Development Fund.
2013-2015	Board member, Israeli Society of Soil Science (ISSS).

Invited seminars

11/2018	The Catalan Institute for Water Research, Girona, Spain.
11/2018	Lyell Centre of Earth and Marine Science and Technology, Heriot-Watt University, Edinburgh, UK.
10/2017	Hydrogeology Group (GHS), Universitat Politècnica de Catalunya (UPC), Barcelona, Spain.
01/2017	Civil and Environmental Engineering, University of Wisconsin, Madison, WI.
01/2017	Earth and Planetary Sciences, Weizmann Institute of Science, Israel.
11/2016	Soil, Water and Environmental Sciences, Agricultural Research Organization (Volcany), Israel.
03/2016	Civil and Environmental Engineering, UC Davis, CA.
03/2016	Biodiversity, Earth & Environmental Science, Drexel University, PA.
12/2015	Lawrence Livermore National Laboratory, Livermore, CA.
08/2014	Schlumberger-Doll Research Center, Cambridge, MA.
04/2014	The Geological Survey of Israel.
04/2014	Charney School of Marine Sciences, University of Haifa, Israel.
12/2013	Earth Sciences Institute, The Hebrew University of Jerusalem, Israel.
11/2013	Dept. of Civil and Environmental Engineering, Technion, Israel.
05/2013	Zuckerberg Institute for Water Research, Ben-Gurion University, Israel.
09/2012	Earth Science Division, Lawrence Berkeley National Laboratory, Berkeley, CA.
09/2012	Dept. of Civil and Environmental Engineering, UC Berkeley, CA.
05/2012	Dept. of Environmental Sciences and Energy Research, Weizmann Institute of Science, Israel.
05/2012	Soil, Water and Environmental Sciences, Agricultural Research Organization (Volcany), Israel.
05/2012	Dept. of Geophysics and Planetary Sciences, Tel-Aviv University, Israel.
01/2012	Max Planck Institute for Dynamics and Self Organization, Göttingen, Germany.
08/2011	Chemical and Biological Engineering Dept., Colorado School of Mines, Golden, CO.
12/2009	Dept. of Environmental Sciences and Energy Research, Weizmann Institute of Science, Israel.
08/2008	Civil and Environmental Engineering, Massachusetts Institute of Technology, Cambridge, MA.
06/2008	Physics of Geological Processes, Oslo University, Oslo, Norway.
04/2008	Dept. of Geophysics, Stanford University, Stanford, CA.
06/2007	Dept. of Environmental Sciences and Energy Research, Weizmann Institute of Science, Israel.
06/2007	Dept. of Geological and Environmental Sciences, Ben-Gurion University, Israel.
06/2007	Geophysics Dept., Lawrence Berkeley National Laboratory, Berkeley, CA.

Publications

Peer-reviewed journal articles, under review

- [24] Borgman, O., Darwent, T., Segre, E., Goehring, L., **Holtzman, R.** Immiscible fluid displacement in porous media with spatially correlated particle sizes. *arXiv:1901.00835 [physics.flu-dyn]* (2019), under review in *Advances in Water Resources*.
- [23] Zhao B., MacMinn, C.W., Primkulov, B.K. ... Juanes, R. Comprehensive comparison of pore-scale models for multiphase flow in porous media. Under review in *Proceedings of the National Academy of Sciences of the United States of America*.

Peer-reviewed journal articles

- [22] Ganot, Y., **Holtzman, R.**, Weisbrod, N., Bernstein, A., Siebner, H., Katz, Y., Kurtzman, D., Modeling the spreading of reverse-osmosis-desalinated-seawater in an aquifer using stable water isotopes. *Hydrology and Earth System Sciences* 22:6323-6333 (2018) [IF 4.437, Q1, Water Resources].
- [21] Biswas, S., Fantinel, P., Borgman, O., **Holtzman, R.** Goehring, L., Drying and percolation in spatially correlated porous media. *Physical Review Fluids* 3:124307 (2018).
- [20] Duman, T., **Holtzman, R.**, Shavit, U., The effect of gravitational settling on concentration profiles and dispersion within and above fractured media. *International Journal of Multiphase Flow*, 106:220-227 (2018) [IF 2.592, Q1, Mechanics].
- [19] Roded, R., Paredes, X., **Holtzman, R.**, Reactive transport under stress: Permeability evolution in deformable porous media. *Earth and Planetary Science Letters*, 493:198 (2018) [IF 4.581, Q1, Geochemistry & Geophysics].
- [18] Ganot, Y., **Holtzman, R.**, Weisbrod, N., Russak, A., Katz, Y., Kurtzman, D., Geochemical processes during managed aquifer recharge with desalinated seawater. *Water Resources Research*, 54:978 (2018) [IF 4.36, Q1, Water Resources, 3 citations].
- [17] Fantinel, P., Borgman, O., **Holtzman, R.** Goehring, L., Drying in a microfluidic chip: Experiments and simulations. *Scientific Reports*, 7:15572 (2017) [IF 5.228, Q1, Multidisciplinary sciences, 5 citations].
- [16] Ganot, Y., **Holtzman, R.**, Weisbrod, N., Nitzan, I., Katz, Y., Kurtzman, D., Monitoring and modeling infiltration-recharge dynamics of managed aquifer recharge with desalinated seawater. *Hydrology and Earth System Sciences*, 21:4479 (2017) [IF 4.437, Q1, Water Resources, 4 citations].
- [15] Borgman, O., Fantinel, P., Lühder, W., Goehring, L., **Holtzman, R.**, Impact of spatially correlated pore-scale heterogeneity on drying porous media. *Water Resources Research*, 53:5645 (2017) [IF 4.36, Q1, Water Resources, 8 citations].
- [14] Pride, S. R., Vasco, D. W., Flekkoy, E. G., **Holtzman, R.**, Dispersive transport and symmetry of the dispersion tensor in porous media. *Physical Review E*, 95:043103 (2017) [IF 2.284, Q1, Physics, Mathematical, 2 citations].
- [13] Hunt, A. G., **Holtzman, R.**, Ghanbarian, B., A percolation-based approach to scaling infiltration and evapotranspiration. *Water*, 9(2):104 (2017) [IF 2.069, Q2, Water Resources, 3 citations].
- [12] **Holtzman, R.**, Effects of pore-scale disorder on fluid displacement in partially-wettable porous media. *Scientific Reports*, 6:36221 (2016) [IF 5.228, Q1, Multidisciplinary sciences, 18 citations].
- [11] **Holtzman, R.**, Segre, E., Wettability stabilizes fluid invasion into porous media via nonlocal, cooperative pore filling. *Physical Review Letters*, 115:164501 (2015) [IF 7.645, Q1, Physics, Multidisciplinary, 48 citations].
- [10] **Holtzman, R.**, Szulczewski, M.L., Juanes, R., Capillary fracturing in granular media. *Physical Review Letters*, 108:264504 (2012) [IF 7.943, Q1, Physics, Multidisciplinary, 65 citations].
- [9] **Holtzman, R.**, Micromechanical model of weakly cemented sediments. *International Journal for Numerical and Analytical Methods in Geomechanics*, 36(7):944-958 (2012) [IF 1.055, Q1, Mechanics, 4 citations].

- [8] **Holtzman, R.**, Juanes, R., Thermodynamic and hydrodynamic constraints on overpressure caused by hydrate dissociation: A pore-scale model. *Geophysical Research Letters*, 38:L14308 (2011) [IF 3.792, Q1, Geosciences, Multidisciplinary, 26 citations].
- [7] **Holtzman, R.**, Juanes, R., Crossover from fingering to fracturing in deformable disordered media. *Physical Review E*, 82(4):046305 (2010) [IF 2.352, Q1, Physics, Mathematical, 60 citations].
- [6] **Holtzman, R.**, Silin, D.B., Patzek, T.W., Frictional granular mechanics: A variational approach. *International Journal for Numerical Methods in Engineering*, 81(10):1259-1280 (2010) [IF 1.928, Q1, Engineering, Multidisciplinary, 15 citations].
- [5] **Holtzman, R.**, Silin, D.B., Patzek, T.W., Mechanical properties of granular materials: A variational approach to grain-scale simulations. *International Journal for Numerical and Analytical Methods in Geomechanics*, 33(3):391-404 (2009) [IF 1.301, Q1, Environmental Sciences, 27 citations].
- [4] **Holtzman, R.**, Shavit, U., Segal-Rozenhaimer, M., Gavrieli, I., Marei, A., Farber, E., Vengosh, A., Quantifying ground water inputs along the Lower Jordan River. *Journal of Environmental Quality*, 34:897-906 (2005) [IF 2.121, Q1, Environmental Sciences, 32 citations].
- [3] Farber, E., Vengosh, A., Gavrieli, I., Marie, A., Bullen, T.D., Mayer, B., **Holtzman, R.**, Segal, M., Shavit, U., Management scenarios for the Jordan River salinity crisis. *Applied Geochemistry*, 20(11):2138-2153 (2005) [IF 2.261, Q1, Geochemistry and Geophysics, 22 citations].
- [2] Segal, M., Shavit, U., Vengosh, A., Gavrieli, I., Farber, E., **Holtzman, R.**, Mayer, B., Shavit, A., Sources and transformations of nitrogen compounds along the Lower Jordan River. *Journal of Environmental Quality*, 33:1440-1451 (2004) [IF 1.617, Q1, Environmental Sciences, 37 citations].
- [1] Farber, E., Vengosh, A., Gavrieli, I., Marie, A., Bullen, T., Mayer, B., **Holtzman, R.**, Segal, M., Shavit, U., The origin and mechanisms of salinization of the Lower Jordan River. *Geochimica et Cosmochimica Acta*, 68:1989-2006 (2004) [IF 3.811, Q1, Geochemistry and Geophysics, 96 citations].

Chapters in books

- [1] Shavit, U., **Holtzman, R.**, Segal, M., Vengosh, A., Farber, E., Gavrieli, I., Bullen, T., and ECO-Research Team. Water sources and quality along the Lower Jordan River, Regional study, in Water resources quality, preserving the quality of our water resources, Edited by Rubin, H., Nachtnebel, H.P., Furst, J., and Shamir, U., Springer-Verlag, Berlin, pp. 127-148 (2002) [4 citations].

Conference papers

- [5] **Holtzman, R.**, Juanes, R., Mechanisms of gas transport in sediments: Crossover from fingering to fracturing. In CD Proc., 7th International Conference on Gas Hydrates (ICGH 2011), Edinburgh, Scotland, 2011.
- [4] **Holtzman, R.**, Juanes, R., Pore scale modeling of overpressure caused by hydrate dissociation. In CD Proc., 7th International Conference on Gas Hydrates (ICGH 2011), Edinburgh, Scotland, 2011.
- [3] **Holtzman, R.**, Silin, D.B., Patzek, T.W., Micromechanics of hydrate dissociation in marine sediments by grain-scale simulations. SPE Paper Number 114223, 2008 SPE Western Regional and Pacific Section AAPG Joint Meeting, Bakersfield, CA, 2008 [8 citations].
- [2] Silin, D.B., **Holtzman, R.**, Patzek, T.W. and Brink, J. L., Monitoring waterflood operations: Hall's method revisited. SPE Paper Number 93879, SPE Western Regional Meeting, Irvine, CA, 2005 [25 citations].
- [1] Silin, D.B., **Holtzman, R.**, Patzek, T.W. and Brink, J. L., Minner, M.L., Waterflood surveillance and control: Incorporating Hall plot and slope analysis. SPE Paper Number 95685, SPE Annual Technical Conference and Exhibition, Dallas, 2005 [12 citations].

Selected conference contributions

Talks

- [29] **Holtzman, R.** Roded, R., Permeability evolution during reactive transport under stress. Computational Methods in Water Resources (CMWR) 2018, St.-Maloe, France, 2018.
- [28] **Holtzman, R.** Borgman, O., Flow instabilities and preferential pathways during multiphase flow in partially-wettable porous medium: Pore-scale origins. EGU General Assembly 2018, Vienna, Austria, 2018.
- [27] **Holtzman, R.**, Roded, R., Reactive transport under stress: Permeability evolution in deformable porous media. EGU General Assembly 2018, Vienna, Austria, 2018.
- [26] **Holtzman, R.**, Vaaknin, I., Katz, O., Aharonov, E., Gas seepage from saturated sediments: Coupling flow and Geomechanics. GeoProc2017–6th International Conference on Coupled THMC Processes in Geosystems Spring Meeting, Paris, France, 2017.
- [25] Borgman, O., Fantinel, P., Goehring, L., **Holtzman, R.**, Impact of heterogeneity and matrix deformations on drying of granular materials, (*invited*). Gordon Research Seminar on Flow and Transport in Permeable Media, Girona, Spain, 2016.
- [24] **Holtzman, R.**, Controls on the stability of immiscible displacement: Interplay of wettability, dynamics and heterogeneity, 2015 Fall Meeting, AGU, San-Francisco, CA, 2015.
- [23] **Holtzman, R.**, Segre, E., Stability of immiscible displacement in porous media: wettability effects (*invited*). Summer school on “Flow and Transport in Porous and Fractured Media”, Cargese, France, 2015.
- [22] **Holtzman, R.**, Segre, E., Stabilizing effects of cooperative pore filling mechanisms on fluid invasion into porous media. 7th International Conference on Porous Media, Padova, Italy, 2015.
- [21] Borgman, O., Fantinel, P., Goehring, L., **Holtzman, R.**, The Impact of Pore-Scale Heterogeneity on Drying Porous Media. EGU General Assembly 2015, Vienna, Austria, 2015.
- [20] **Holtzman, R.**, Segre, E., Impact of wettability on fluid-fluid displacement: Pore-scale study (*invited*). 2014 Fall Meeting, AGU, San-Francisco, CA, 2014.
- [19] Szulczewski, M.L, **Holtzman, R.**, Trojer, M., Juanes, R., Capillary fracturing in granular media. APS March Meeting 2013 , Baltimore, MD, 2013.
- [18] Juanes, R., Trojer, M., Szulczewski, M.L, **Holtzman, R.**, Impact of wettability on two-phase displacement patterns in granular media. 66th Annual Meeting of the APS Division of Fluid Dynamics, Pittsburgh, PA, 2013.
- [17] **Holtzman, R.**, Szulczewski, M., Juanes, R., Capillary fracturing in granular media (*plenary lecture*). Gordon Research Seminar on Flow and Transport in Permeable Media, Les Diablerets, Switzerland, 2012.
- [16] **Holtzman, R.**, Capillary fracturing in granular media (*keynote lecture*). Israeli Conference on Mechanical Engineering (ICME), Tel Aviv, Israel, 2012.
- [15] **Holtzman, R.**, Szulczewski, M., Juanes, R., Gas invasion into unconsolidated sediments: Implications for hydrate dissociation (*plenary lecture*). Gordon Research Conference on Natural Gas Hydrate Systems, Ventura, CA, 2012.
- [14] **Holtzman, R.**, Szulczewski M., Darby J., Juanes, R., Crossover from fingering to fracturing in fluid-fluid displacement in granular media: Theory and experiments. 2011 Fall Meeting, AGU, San-Francisco, CA, 2011.
- [13] **Holtzman, R.**, Juanes, R., Mechanisms of gas transport in sediments: Crossover from fingering to fracturing. Seventh International Conference on Gas Hydrates (ICGH 2011), Edinburgh, Scotland, 2011.
- [12] **Holtzman, R.**, Juanes, R., Pore scale modeling of overpressure caused by hydrate dissociation. Seventh International Conference on Gas Hydrates (ICGH 2011), Edinburgh, Scotland, 2011.

- [11] **Holtzman, R.**, Juanes, R., Crossover from fingering to fracturing in deformable disordered media. 2010 Fall Meeting, AGU, San-Francisco, CA, 2010.
- [10] **Holtzman, R.**, Juanes, R., Hydrate Formation in gas-rich marine sediments: A grain-scale model. 2009 Fall Meeting, AGU, San-Francisco, CA, 2009.
- [9] **Holtzman, R.**, Silin, D.B., Patzek, T.W., Nonlinear deformation of weakly-cemented sediments: A paradigm? 10th U.S. National Congress for Computational Mechanics, Columbus, OH, 2009.
- [8] **Holtzman, R.**, Jain, A.K., Juanes, R., A grain-scale model coupling mechanics, multiphase fluid flow, and the kinetics of hydrate formation. 10th U.S. National Congress for Computational Mechanics, Columbus, OH, 2009.
- [7] **Holtzman, R.**, Silin, D.B., Patzek, T.W., Frictional granular mechanics: A variational approach to grain-scale simulations. 27th IUGG Conference on Mathematical Geophysics (CMG), Longyearbyen, Norway, 2008.
- [6] **Holtzman, R.**, Silin, D.B., Patzek, T.W., Mechanical properties of granular materials: A variational approach to grain-scale simulations. 8th World Congress on Computational Mechanics, Venice, Italy, 2008.
- [5] **Holtzman, R.**, Consequences of hydrate dissociation in marine sediments by grain-scale simulations. 2008 SPE Western Regional Student Paper Contest, Bakersfield, CA, 2008.
- [4] **Holtzman, R.**, Silin, D.B., Patzek, T.W., Deformations of sediments via grain-scale simulations: A quasi-static approach. 2007 Fall Meeting, AGU, San-Francisco, CA, 2007.
- [3] **Holtzman, R.**, Effective elastic properties via grain-scale simulations. 2007 SPE Western Regional Student Paper Contest, Long Beach, CA, 2007.
- [2] **Holtzman, R.**, Silin, D.B., Patzek, T.W., Micromechanics of hydrate-bearing sediments by grain-scale simulations. 2007 Fall Meeting, AGU, San-Francisco, CA, 2007.
- [1] **Holtzman, R.**, Silin, D.B., Patzek, T.W., Mechanical properties of granular media via grain-scale simulations. 9th US National Congress in Computational Mechanics, San-Francisco, CA, 2007.

Posters

- [18] **Holtzman, R.**, Planet, R., Ortin, J., Dentz, M., Hysteresis in Multiphase Flow in Fractured and Porous media. Gordon Research Conference on Flow and Transport in Permeable Media 2018, Newry, ME, 2018.
- [17] Roded, R., **Holtzman, R.**, Reactive transport under stress: Permeability evolution by chemo-mechanical deformation. 2017 Fall Meeting, AGU, New Orleans, LA, 2017.
- [16] Ganot, Y., **Holtzman, R.**, Weisbrod, N., Russak, A., Katz, Y., Kurtzman, D., Geochemical processes during managed aquifer recharge with desalinated seawater. 2017 Fall Meeting, AGU, New Orleans, LA, 2017.
- [15] Borgman, O., **Holtzman, R.**, Impact of matrix deformations on drying of granular materials, Interpore-9th International Conference on Porous Media, Rotterdam, Netherlands, 2017.
- [14] Borgman, O., Fantinel, P., Goehring, L., **Holtzman, R.**, Impact of heterogeneity and matrix deformations on drying of granular materials, Gordon Research Conference on Flow and Transport in Permeable Media, Girona, Spain, 2016.
- [13] **Holtzman, R.**, Unstable, preferential fluid displacement: Effects of pore-scale disorder, wettability and flow rates, Gordon Research Conference on Flow and Transport in Permeable Media, Girona, Spain, 2016.
- [12] Fantinel, P., Borgman, O., **Holtzman, R.**, Goehring, L., Drying in microfluidic cells, Gordon Research Conference on Flow and Transport in Permeable Media, Girona, Spain, 2016.
- [11] Borgman, O., Fantinel, P., Goehring, L., **Holtzman, R.**, The Impact of Pore-Scale Heterogeneity on Drying Porous Media: Pore-Network Model Simulations. Interpore-7th International Conference on Porous Media, Padova, Italy, 2015.

- [10] **Holtzman, R.**, Borgman, O., Fantinel, P., Goehring, L., Pore-scale study of drying in porous media. 2014 Fall Meeting, AGU, San-Francisco, CA, 2014.
- [9] **Holtzman, R.**, Segre, E., Trojer, M., Juanes, R., Impact of wettability on fluid-fluid displacement. Gordon Research Conference on Flow and Transport in Permeable Media, Lewiston, ME, 2014.
- [8] **Holtzman, R.**, Borgman, O., Fantinel, P., Goehring, L., Pore-scale study of drying in porous media. Gordon Research Seminar on Flow and Transport in Permeable Media, Lewiston, ME, 2014.
- [7] Trojer, M., Szulczewski, M.L, **Holtzman, R.**, Juanes, R., Impact of wettability on two-phase displacement patterns in granular media. 2013 Fall Meeting, AGU, San-Francisco, CA, 2013.
- [6] **Holtzman, R.**, Szulczewski, M.L, Juanes, R., Capillary fracturing in granular media. Gordon Research Conference on Flow and Transport in Permeable Media, Les Diablerets, Switzerland, 2012.
- [5] **Holtzman, R.**, Juanes, R., Crossover from fingering to fracturing in deformable disordered media. Gordon Research Conference on Flow and Transport in Permeable Media, Lewiston, ME, 2010.
- [4] **Holtzman, R.**, Juanes, R., Hydrate growth in gas-rich sediments: A grain-scale model. Gordon Research Conference on Natural Gas Hydrate Systems, Waterville, ME, 2010.
- [3] **Holtzman, R.**, Silin, D.B., Patzek, T.W., Estimating macroscopic mechanical properties via grain-scale simulations. 2007 AAPG Annual Convention, Long Beach, CA, 2007.
- [2] **Holtzman, R.**, Silin, D.B., Patzek, T.W., The strength of hydrate-bearing sediments: a grain-scale approach. 2006 Fall Meeting, AGU, San-Francisco, CA, 2006.
- [1] **Holtzman, R.**, Shavit, U. , Segal-Rozenhaimer, Vengosh, A., Farber, E., M., Gavrieli, I., Salinization sources along the lower jordan river under drought conditions. 2003 Fall Meeting, AGU, San-Francisco, CA, 2003.