

Jeffrey D. Hyman, Ph.D.

Team Lead, Computational Hydrogeology and Energy Science in the Subsurface (CHESS) Team;
Staff Scientist, EES-16
Earth and Environmental Sciences Division, Los Alamos National Laboratory; Affiliate Faculty,
Colorado School of Mines
Mail Stop T003, Los Alamos, New Mexico, USA, 87545
Tel.: +1-507-581-2074
Email: jhyman@lanl.gov

Education and Professional Career

2007 B.A. Mathematics, Ancient Studies, and Religion; St. Olaf College, Northfield, MN, USA
2010 M.S. Applied Mathematics; University of Arizona, Tucson, AZ, USA
2014 Ph.D. Applied Mathematics (minor: Hydrology and Water Resources); University of Arizona,
Tucson, AZ, USA
2014-2017 Postdoctoral Researcher, then Director's Postdoctoral Fellow; Los Alamos National
Laboratory, USA
2017-Present Staff Scientist, EES-16, Los Alamos National Laboratory, USA
2023-Present Affiliate Faculty, Geology and Geological Engineering, Colorado School of Mines,
USA
Since 2026 Team Leader, Computational Hydrogeology and Energy Science in the Subsurface
(CHESS) Team, Los Alamos National Laboratory, USA

Commitment, Appointments and Scientific Volunteer Jobs

2025-2027 Program Director, SIAM Geosciences Activity Group; Organizing Committee Co-
Chair, SIAM Geosciences Annual Conference (2027)
2018-2024 Primary Session Convener, Coupled Flow Processes in Fractured Media Across
Scales, AGU Fall Meeting (annual); 2020-2022 Steering Committee, Southern US
Chapter of InterPore
2018-2019 Member, then Assistant Chair, Science Advisory Panel for LANL LDRD-DR Proposal
Review
2022-2025 PI, DOE EFRC Center on Geo-processes in Mineral Carbon Storage (GMCS)
2015-2017 Director's Postdoctoral Fellow, Los Alamos National Laboratory
- Guest Editor, Geotechnique Letters (InterPore Journal)
- Referee: Geophysical Research Letters, Journal of Computational Physics, Physical
Review E, Advances in Water Resources, Computational Geosciences, Water
Resources Research, Transport in Porous Media, SIAM Journal on Scientific
Computing, Engineering Geology, Environmental Fluid Mechanics, Geotechnique
Letters, Frontiers in Earth Science, Mathematical Geosciences, and Spatial Statistics
AGU; InterPore (LANL Point of Contact); SIAM Geoscience Working Group

Professional Awards, Offers and Recognitions

2024 Top Cited Article in Reviews of Geophysics
2021 Top Cited Article in Journal of Geophysical Research: Solid Earth during 2019-2020
2018 Large Team Distinguished Performance Award for Subsurface Science for
Environmental Protection, LANL
2017 R&D 100 Winner, dfnWorks (Principal Development Team); Federal Laboratory
Consortium Notable Technology Development Award, dfnWorks
2015 InterPore Fraunhofer Award for Young Researcher
2014 Galileo Circle Scholar, University of Arizona
2013 Outstanding Graduate Teaching Assistant Award, University of Arizona

Most important Publications (maximum 10)

(Peer reviewed journal articles / books / patents)

- [1] R. S. Middleton, J. W. Carey, R. P. Currier, J. D. Hyman, Q. Kang, S. Karra, J. Jimenez-Martinez, M. L. Porter, and H. S. Viswanathan. Shale gas and non-aqueous fracturing fluids: Opportunities and challenges for supercritical CO₂. *Applied Energy*, 147:500-509, 2015.
- [2] J. D. Hyman, S. Karra, N. Makedonska, C. W. Gable, S. L. Painter, and H. S. Viswanathan. dfnWorks: A discrete fracture network framework for modeling subsurface flow and transport. *Computers & Geosciences*, 84:10-19, 2015.
- [3] R. S. Middleton, R. Gupta, J. D. Hyman, and H. S. Viswanathan. The shale gas revolution: Barriers, sustainability, and emerging opportunities. *Applied Energy*, 199:88-95, 2017.
- [4] H. S. Viswanathan, J. Ajo-Franklin, J. Birkholzer, J. W. Carey, Y. Guglielmi, J. D. Hyman, S. Karra, L. J. Pyrak-Nolte, H. Rajaram, G. Srinivasan, and D. M. Tartakovsky. From fluid flow to coupled processes in fractured rock: recent advances and new frontiers. *Reviews of Geophysics*, 60(1):e2021RG000744, 2022.
- [5] J. D. Hyman, C. W. Gable, S. L. Painter, and N. Makedonska. Conforming Delaunay triangulation of stochastically generated three dimensional discrete fracture networks: A feature rejection algorithm for meshing strategy. *SIAM Journal on Scientific Computing*, 36(4):A1871-A1894, 2014.
- [6] J. D. Hyman, J. Jimenez-Martinez, H. S. Viswanathan, J. W. Carey, M. L. Porter, E. Rougier, S. Karra, Q. Kang, L. Frash, L. Chen, Z. Lei, D. O'Malley, and N. Makedonska. Understanding hydraulic fracturing: a multiscale problem. *Philosophical Transactions of the Royal Society A*, 374(2078):20150426, 2016.
- [7] J. D. Hyman, G. Aldrich, H. Viswanathan, N. Makedonska, and S. Karra. Fracture size and transmissivity correlations: Implications for transport simulations in sparse three-dimensional discrete fracture networks following a truncated power law distribution of fracture size. *Water Resources Research*, 52(8):6472-6489, 2016.
- [8] L. Chen, W. Fang, Q. Kang, J. D. Hyman, H. S. Viswanathan, and W. Q. Tao. Generalized lattice Boltzmann model for flow through tight porous media with Klinkenberg's effect. *Physical Review E*, 91:033004, 2015.
- [9] J. D. Hyman, M. Dentz, A. Hagberg, and P. Kang. Linking structural and transport properties in three-dimensional fracture networks. *Journal of Geophysical Research: Solid Earth*, 124(2), 2019.
- [10] J. D. Hyman, A. Hagberg, G. Srinivasan, J. Mohd-Yusof, and H. Viswanathan. Predictions of first passage times in sparse discrete fracture networks using graph-based reductions. *Physical Review E*, 96:013304, 2017.