



Sally Benson

Precourt Family Professor, Professor of Energy Science Engineering and Senior Fellow at the Woods Institute for the Environment and the Precourt Institute for Energy

Energy Science & Engineering

 Curriculum Vitae available Online

CONTACT INFORMATION

- **Administrative Contact**

Thuy Nguyen - Sponsored Projects Administrator

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Tel (650) 725-2725

Bio

BIO

Sally M. Benson, who joined Stanford University in 2007, is the Precourt Family Professor in the Department of Energy Resources Engineering in the School of Earth, Energy & Environmental Sciences; she studies technologies and pathways to reducing greenhouse gas emissions including geologic storage of CO₂ in deep underground formations and energy systems analysis for a low-carbon future. From 2021 to 2023 she was on leave from the University to serve as the Energy Division Director and Chief Strategist for the Energy Transition at the White House Office of Science and Technology Policy. Prior to this, she served as the Co-Director of the Stanford Center for Carbon Storage and the Stanford Carbon Removal Initiative. From 2013 to 2020, she served as the Director and Co-Director of the Precourt Institute for Energy. She also served as the Director of the Global Climate and Energy Project from 2009 to 2019.

Prior to joining Stanford, Benson was Division Director for Earth Sciences, Associate Laboratory Director for Energy Sciences and Deputy Director at LBNL.

Professor Benson currently is a member of the Breakthrough Energy Innovation Council and a Board Member of the Global Carbon Capture and Storage Institute. In 2023 she was elected to the American Academy of Arts and Sciences. She has previously served on the Board of Directors for Climate Central and from 2008 to 2020 on the Board of Directors of the National Renewable Energy Laboratory. She also served on the Advisory Boards for Breakthrough Energy Ventures, Argonne National Laboratory and Pacific Northwest National Laboratory, Princeton's Carbon Mitigation Initiative, Princeton's Adlinger Center, Japan's Initiative for the Cool Earth Forum, Climate Vault, and the Lahore University of Management Science in Pakistan. Over the past several years she participated in a number of National Academy of Sciences, Secretary of Energy, and National Petroleum Council research needs assessments related to carbon management. She also is on the Editorial Board for Energy and Environmental Sciences.

ACADEMIC APPOINTMENTS

- Professor, Energy Science & Engineering
- Senior Fellow, Precourt Institute for Energy

- Senior Fellow, Stanford Woods Institute for the Environment
- Co-Director, Precourt Institute for Energy
- Director, Global Climate and Energy Project

ADMINISTRATIVE APPOINTMENTS

- Division Director and Chief Strategist for the Energy Transition, White House Office of Science and Technology Policy, (2021-2023)
- Co-Director, Precourt Institute for Energy, Stanford University, (2014-2020)
- Professor, Energy Resources Engineering Department, Stanford University, (2013- present)
- Acting Director, Precourt Institute for Energy, Stanford University, (2012-2013)
- Director, Global Climate and Energy Project, Stanford University, (2009- present)
- Professor (Research), Energy Resources Engineering Department, Stanford University, (2007-2013)
- Senior Fellow by Courtesy, Woods Institute for the Environment, Stanford University, (2007-2013)
- Executive Director, Global Climate & Energy Project, Stanford University, (2007-2009)
- Deputy Director for Operations, Lawrence Berkeley National Laboratory, (2001-2004)
- Associate Laboratory Director, Energy Sciences, Lawrence Berkeley National Laboratory, (1997-2001)
- Director, Earth Sciences Division, Lawrence Berkeley National Laboratory, (1993-2001)
- Visiting Professor, Earth Sciences Department, Clemson University, (1990-1998)
- Positions of growing responsibility to Senior Staff Scientist, Earth Sciences Division, Lawrence Berkeley National Laboratory, (1977-2006)

HONORS AND AWARDS

- Elected Member, American Academy of Arts and Sciences (2023)
- Lifetime Achievement Award, Abdullah bin Hamad Al-Attiyah Foundation (2023)
- Engineers Health, Safety, and Environmental Award, Society Of Petroleum Engineers (2019)
- Arthur D. Storke Lecturer, Columbia University (2018)
- Distinguished Lecture Tour, Peter Cook Center, University of Melbourne (2017)
- Honorary Degree, Smith College, Massachusetts (2015)
- Roslyn Silver'27 Science Lectureship, Barnard College (2015)
- Greenman Award, IEA Greenhouse Gas Control Programme (2012)
- Alberta Innovates Lecturer of 2011, Alberta Innovates - Energy and Environment Solutions (AI-EES) (2011)
- Stanford Fellow, Stanford University (2009-2011)
- ARCS 2009 American Pacesetter Award, Achievement Rewards for College Scientists (2009)
- Michel T. Halbouty Distinguished Lecture Award, Geological Society of America (2009)
- Contributed to the reports of the IPCC, which was awarded the Nobel Peace Prize in 2007, Norwegian Nobel Committee (2007)
- DOE Certificate of Appreciation, Department of Education (DOE) (1996)

BOARDS, ADVISORY COMMITTEES, PROFESSIONAL ORGANIZATIONS

- Member, Breakthrough Energy Innovation Council (2023 - present)
- Advisory Board, Climate Vault (2021 - 2021)
- Scientific Advisory Board, Breakthrough Energy Ventures (2021 - 2021)
- Member, Advisory Board, Colorado School of Mines, Payne Institute (2018 - 2021)
- Member, Advisory Board, Princeton University, Andlinger Center (2018 - 2021)

- Member, Director's Scientific Advisory Board, Argonne National Laboratory (2018 - 2021)
- Co-Lead for Geological Storage Section for NPC CCS Study, National Petroleum Council (2018 - 2020)
- Design Team Member for Long Range Planning -- Sustainability, Stanford University (2018 - 2020)
- Member, NAS Study Panel on Carbon Dioxide Removal and Negative Emissions (2017 - 2018)
- Member, Secretary of Energy Advisory Board Task Force for on CO2 Utilization and Negative Emissions (2016 - 2017)
- Ambassador, Clean Energy, Education, and Empowerment Initiative (2015 - present)
- Chair, Witherspoon Mid-Career Award, American Geophysical Union (2015 - 2018)
- Advisory Board Member, Japan Initiative for the Cool Earth Forum (2014 - present)
- Member, Energy, Energy and Environment Advisory Board, Pacific Northwest National Laboratory (2014 - 2021)
- Chair, Advisory Board, Lahore University of Management Science, Pakistan (2014 - 2018)
- Chair, Energy, Climate and Infrastructure Advisory Board, Sandia National Laboratory (2014 - 2017)
- Member, Organizing Committee, 12th International Conference on Greenhouse Gas Control (2013 - 2018)
- Co-founding Editor, MRS Energy and Sustainability Journal (2013 - 2015)
- Member, Visiting Committee, Department of Environmental Engineering and Earth Sciences, Clemson University (2012 - 2020)
- Member, Energy, Climate and Infrastructure Advisory Board, Sandia National Laboratory, Albuquerque, NM (2012 - 2017)
- Member, Energy Systems Integration Technical Review Committee, National Renewable Energy Laboratory, Golden, Colorado (2012 - 2017)
- Co-organizer and teacher, Joint Stanford-SLAC-NREL Energy Summer School, Stanford University (2012 - 2012)
- Member, Gordon Conference Organizing Committee, Flow Through Porous Media (2012 - 2012)
- Sustainability Committee, Stanford University (2012 - 2012)
- Co-director, Stanford Center for Carbon Storage, Stanford University (2011 - present)
- Member, Organizing Committee, 11th International Conference on Greenhouse Gas Control Technologies, IEA Greenhouse Gas Programme (2011 - 2012)
- Co-organizer and teacher, Joint Stanford-SLAC-NREL Energy Summer School (2011 - 2011)
- Member, California Council on Science and Technology (2011 - 2011)
- Member, Committee on Emerging Workforce Trends in the U.S. Energy and Mining Industries, National Research Council (2011 - 2011)
- Member, Advisory Board, National Geographic Society, Great Energy Challenge (2010 - 2016)
- Member, BIGCCS Scientific Committee, Research Council of Norway (2010 - 2014)
- Board of Directors, Carbon Management Canada (2010 - 2013)
- Judge, Aspen Institute Energy and Environment Awards (2010 - 2010)
- Member, State of California, "Blue Ribbon" Panel on Carbon Dioxide Capture and Storage (2010 - 2010)
- Member, Advisory Board, MUSTANG Project on CCS (2009 - 2015)
- Member, Advisory Board, Lahore University of Management Science, Pakistan (2009 - 2014)
- Member and Chair, Environmental Subcommittee of the Advisory Panel on Investment Responsibility & Licensing (APIR-L) (2009 - 2013)
- Coordinating Lead Author, Global Energy Assessment (GEA), Chapter 13, Carbon Dioxide Capture and Storage (2009 - 2012)
- Member, Scientific Policy Board, SLAC National Laboratory (2009 - 2012)
- Member, World Resources International Project to Develop Guidelines for Carbon Dioxide Capture and Storage (2009 - 2011)
- Member, WRI Task Force on CCS in China (2009 - 2010)
- Member, Organizing Committee, 10th International Conference on Greenhouse Gas Control Technologies, IEA Greenhouse Gas Programme (2009 - 2010)
- Co-organizer and teacher, Joint Stanford-SLAC-NREL Energy Summer School (2009 - 2009)

- Judge, Aspen Institute Energy and Environment Awards (2009 - 2009)
- Board of Directors, Climate Central, Princeton, NJ (2008 - present)
- Board of Directors, National Renewable Energy Laboratory (2008 - present)
- Climate Change Committee Member, American Association of Petroleum Geologists (2008 - 2010)
- Instructor, Stanford Continuing Education: A Practical Guide to a Sustainable Energy Future (2008 - 2008)
- Participant, Arctic Expedition for Climate Action, sponsored by National Geographic, Linblad Expeditions and the Aspen Institute (2008 - 2008)
- Member, Organizing Committee, 9th International Conference on Greenhouse Gas Control Technologies, IEA Greenhouse Gas Programme (2007 - 2008)
- Task Force Member, Council on Foreign Relations, Climate Change Task Force (2007 - 2007)
- Member, Sleipner Risk Assessment Advisory Committee, Statoil (2006)
- Chair, Scientific Advisory Board, Atmospheric Radiation Measurement User Facility (2006 - 2008)
- Member, FutureGen Technical Advisory Board (2006 - 2008)
- Section Co-Chair for Carbon Sequestration, Assessment of Basic Research Needs in Earth Sciences, Commissioned by DOE Basic Energy Sciences (2006 - 2007)
- Co-Chair, Technical Review of the CO2CRC, Australia (2006 - 2006)
- Member, Technical Advisory Board for the In Salah CO2 Storage Project (2005 - 2013)
- Coordinating Lead Author, Intergovernmental Panel on Climate Change (IPCC) Special Report on CO2 Capture and Storage: Chapter on Geologic Storage of CO2 (2003 - 2005)
- Member, Carbon Mitigation Initiative (CMI) Advisory Board, Princeton University, NJ (2002 - present)
- Member, CO2 Capture Project (CCP) Technology Advisory Board (2002 - 2007)
- Chair, School of Earth Sciences Advisory Board, Stanford University (2002 - 2004)
- Member, American Geophysical Union (2000 - present)
- Member, Society of Petroleum Engineers (2000 - present)

PROFESSIONAL EDUCATION

- Ph.D., University of California, Berkeley , Material Science & Mineral Engineering (1988)
- M.Sc., University of California, Berkeley , Material Science & Mineral Engineering (1984)
- B.A., Barnard College, Columbia University , Geology (1977)

LINKS

- Benson Lab: <http://pangea.stanford.edu/research/bensonlab/>
- Precourt Institute for Energy (PIE): <https://energy.stanford.edu>
- Stanford Woods Institute: <http://woods.stanford.edu/>
- Stanford Center for Carbon Storage: <https://sccs.stanford.edu/>
- Google Scholar: Benson: <https://scholar.google.com/citations?user=t7GevjYAAAAJ&hl=en&oi=ao>

Research & Scholarship

CURRENT RESEARCH AND SCHOLARLY INTERESTS

Research Activities

For the past 15 years, I have focused on reducing greenhouse gas emissions from energy production. My research activities cover two different but complementary areas: (1) energy systems analysis to help guide decision-making about the best options for providing plentiful energy supplies while reducing greenhouse gas emissions, and (2) sequestering carbon dioxide in deep underground formations.

Teaching Activities

I team two courses regularly: Sustainable Energy for 9 Billion (ENERGY104) and Carbon Dioxide Capture and Storage (ENERGY153/253). In addition, I regularly teach research seminars related to decarbonizing the grid and increasing energy access for developing countries. I am currently teaching a Carbon Removal Seminar (Fall) and the Hydrogen Seminar (Winter).

Professional Activities

Board Member, National Renewable Energy Lab and Climate Central. Member of American Geophysical Union, Society of Petroleum Engineers, and American Association for the Advancement of Science. Advisory Board Member for National Geographic's Great Energy Challenge, Sandia National Laboratory and Pacific Northwest National Laboratory.

Teaching

COURSES

2024-25

- Carbon Capture and Sequestration: ENERGY 153, ENERGY 253 (Win)
- Carbon Dioxide and Methane Removal, Utilization, and Sequestration: EARTHSYS 308, ENERGY 308, ENVRES 295, ESS 308, ME 308 (Aut)
- Energy Policy in California and the West: CEE 263G, ENERGY 73, POLISCI 73, PUBLPOL 73 (Spr)
- Hydrogen Economy: ENERGY 205 (Win)
- Living Laboratory for Sustainability at Stanford: SUSTAIN 119, SUSTAIN 219 (Spr)

2023-24

- Carbon Capture and Sequestration: ENERGY 153, ENERGY 253 (Win)
- Carbon Dioxide and Methane Removal, Utilization, and Sequestration: EARTHSYS 308, ENERGY 308, ENVRES 295, ESS 308, ME 308 (Aut)
- ESE Master's Graduate Seminar: ENERGY 351 (Spr)
- ESE PhD Graduate Seminar: ENERGY 352 (Spr)
- Energy Policy in California and the West: CEE 263G, ENERGY 73, POLISCI 73, PUBLPOL 73 (Spr)
- Energy Systems Fundamentals: ENERGY 201A (Aut)
- Hydrogen Economy: ENERGY 205 (Win)
- Sustainable Energy for 9 Billion: ENERGY 104, ENERGY 204 (Win)

STANFORD ADVISEES

Doctoral Dissertation Reader (AC)

Dylan Crain, Mo Sodwatana

Postdoctoral Faculty Sponsor

Pengfei Zhao

Doctoral Dissertation Advisor (AC)

Catherine Callas, Rebecca Grekin, Isaac Ju, Aman Raizada

Doctoral Dissertation Co-Advisor (AC)

Bex Abylkhani, Oluchi Obinegbo

Master's Program Advisor

Alexis Bonnafont, Christopher Noll

Doctoral (Program)

David Akanmu, Julia Frohmann, Rebecca Grekin, Richard Larson, Alice Nuz

Publications

PUBLICATIONS

- **Technoeconomic decision support for second-life batteries** *APPLIED ENERGY*
Zhuang, J., Bach, A., van Vlijmen, B. C., Reichelstein, S. J., Chueh, W., Onori, S., Benson, S. M.
2025; 390
- **The role of injection method on residual trapping: Insights into bridging scales and heterogeneity** *ADVANCES IN WATER RESOURCES*
Spurin, C., Ellman, S., Bultreys, T., Kurotori, T., Benson, S., Tchelepi, H. A.
2025; 197
- **EnergyPlus as a computational engine for commercial building operational digital twins** *ENERGY AND BUILDINGS*
Naeem, A., Ho, C., Kolderup, E., Jain, R. K., Benson, S., de Chalendar, J.
2025; 329
- **Direct Observations of Solute Dispersion in Rocks With Distinct Degree of Sub-Micron Porosity** *WATER RESOURCES RESEARCH*
Kurotori, T., Zahasky, C., Benson, S. M., Pini, R.
2025; 61 (2)
- **Life cycle comparison of industrial-scale lithium-ion battery recycling and mining supply chains.** *Nature communications*
Machala, M. L., Chen, X., Bunke, S. P., Forbes, G., Yegizbay, A., de Chalendar, J. A., Azevedo, I. L., Benson, S., Tarpeh, W. A.
2025; 16 (1): 988
- **Critically assessing sodium-ion technology roadmaps and scenarios for techno-economic competitiveness against lithium-ion batteries** *NATURE ENERGY*
Yao, A., Benson, S. M., Chueh, W. C.
2025
- **Energy models in service of aquifer specific groundwater irrigation expansion in India** *ENVIRONMENTAL RESEARCH LETTERS*
Ray, S., Benson, S. M.
2024; 19 (10)
- **Data-driven characterization of cooling needs in a portfolio of co-located commercial buildings** *ISCIENCE*
Naeem, A., Benson, S. M., de Chalendar, J. A.
2024; 27 (7)
- **Data-driven characterization of cooling needs in a portfolio of co-located commercial buildings.** *iScience*
Naeem, A., Benson, S. M., de Chalendar, J. A.
2024; 27 (7): 110398
- **Criteria and workflow for selecting saline formations for carbon storage** *INTERNATIONAL JOURNAL OF GREENHOUSE GAS CONTROL*
Callas, C., Davis, J., Saltzer, S. D., Hashemi, S. S., Wen, G., Gold, P. O., Zoback, M. D., Benson, S. M., Kavscek, A. R.
2024; 135

- **A Methodology for Fueling Mobility Markets with Hydrogen from Natural Gas plus Carbon Capture and Sequestration** *INTERNATIONAL JOURNAL OF GREENHOUSE GAS CONTROL*
Okoroafor, E. R., Bracci, J., Boness, N. L., Saltzer, S. D., Shrimali, G., Hennessy, E. M., Kim, T., Seamon, A., Benson, S. M., Zoback, M. D., Kovscek, A. R.
2024; 133
- **Assessing the impact of dip angle on carbon storage in saline reservoirs to aid site selection** *INTERNATIONAL JOURNAL OF GREENHOUSE GAS CONTROL*
Callas, C., Kovscek, A. R., Benson, S. M.
2023; 129
- **Assessing the impact of dip angle on carbon storage in saline reservoirs to aid site selection** *INTERNATIONAL JOURNAL OF GREENHOUSE GAS CONTROL*
Callas, C., Kovscek, A. R., Benson, S. M.
2023; 129
- **Quantification of the Impact of Acidified Brine on Fracture-Matrix Transport in a Naturally Fractured Shale Using in Situ Imaging and Modeling** *ENERGY & FUELS*
Zahasky, C., Murugesu, M., Kurotori, T., Sutton, C., Druhan, J. L., Vega, B., Benson, S. M., Kovscek, A. R.
2023
- **An integrated framework for optimal monitoring and history matching in CO₂ storage projects** *COMPUTATIONAL GEOSCIENCES*
Crain, D. M., Benson, S. M., Saltzer, S. D., Durlofsky, L. J.
2023
- **Real-time high-resolution CO₂ geological storage prediction using nested Fourier neural operators** *ENERGY & ENVIRONMENTAL SCIENCE*
Wen, G., Li, Z., Long, Q., Azizzadenesheli, K., Anandkumar, A., Benson, S. M.
2023
- **Comparative Analysis of Imaging and Measurements of Micrometer-Scale Fracture Aperture Fields Within a Heterogeneous Rock Using PET and X-ray CT** *TRANSPORT IN POROUS MEDIA*
Kurotori, T., Zahasky, C., Gran, M., Kovscek, A. R., Benson, S. M.
2023
- **Reconciling predicted and observed carbon mineralization in siliciclastic formations** *CHEMICAL GEOLOGY*
Mishra, A., Boon, M. M., Benson, S. M., Watson, M. N., Haese, R. R.
2023; 619
- **Unlocking demand response in commercial buildings: Empirical response of commercial buildings to daily cooling set point adjustments** *ENERGY AND BUILDINGS*
de Chalendar, J. A., McMahon, C., Valenzuela, L., Glynn, P. W., Benson, S. M.
2023; 278
- **Deep-Learning-Based Flow Prediction for CO₂ Storage in Shale-Sandstone Formations** *ENERGIES*
Chu, A. K., Benson, S. M., Wen, G.
2023; 16 (1)
- **Mixed imbibition controls the advance of wetting fluid in multiscale geological media** *Advances in Water Resources*
Kurotori, T., Murugesu, M. P., Zahasky, C., Vega, B., Druhan, J. L., Benson, S. M., Kovscek, A. R.
2023
- **Criteria and workflow for selecting depleted hydrocarbon reservoirs for carbon storage** *APPLIED ENERGY*
Callas, C., Saltzer, S. D., Davis, J., Hashemi, S. S., Kovscek, A. R., Okoroafor, E. R., Wen, G., Zoback, M. D., Benson, S. M.
2022; 324
- **Modelling CO₂ plume spreading in highly heterogeneous rocks with anisotropic, rate-dependent saturation functions: A field-data based numeric simulation study of Otway** *INTERNATIONAL JOURNAL OF GREENHOUSE GAS CONTROL*
Shao, Q., Boon, M., Youssef, A., Kurtev, K., Benson, S. M., Matthai, S. K.
2022; 119

- **Distributional health impacts of electricity imports in the United States** *ENVIRONMENTAL RESEARCH LETTERS*
Hennessy, E. M., de Chalendar, J. A., Benson, S. M., Azevedo, I. L.
2022; 17 (6)
- **Overcoming barriers to solar dryer adoption and the promise of multi-seasonal use in India** *ENERGY FOR SUSTAINABLE DEVELOPMENT*
Machala, M. L., Tan, F. L., Poletayev, A., Khan, M. I., Benson, S. M.
2022; 68: 18-28
- **Three-Dimensional Permeability Inversion Using Convolutional Neural Networks and Positron Emission Tomography** *WATER RESOURCES RESEARCH*
Huang, Z., Kurotori, T., Pini, R., Benson, S. M., Zahasky, C.
2022; 58 (3)
- **Mass transfer between fluids as a mechanism for seismic wave attenuation: Experimental evidence from water-CO₂ saturated sandstones** *GEOPHYSICAL JOURNAL INTERNATIONAL*
Chapman, S., Borgomano, J. M., Quintal, B., Benson, S. M., Fortin, J.
2022
- **Anisotropic rate-dependent saturation functions for compositional simulation of sandstone composites** *JOURNAL OF PETROLEUM SCIENCE AND ENGINEERING*
Boon, M., Matthai, S. K., Shao, Q., Youssef, A. A., Mishra, A., Benson, S. M.
2022; 209
- **Preferential Solute Transport in Low Permeability Zones During Spontaneous Imbibition in Heterogeneous Porous Media** *WATER RESOURCES RESEARCH*
Zahasky, C., Benson, S. M.
2022; 58 (1)
- **U-FNO—An enhanced Fourier neural operator-based deep-learning model for multiphase flow** *Advances in Water Resources*
Wen, G., Li, Z., Azizzadenesheli, K., Anandkumar, A., Benson, S. M.
2022; 163
- **California's approach to decarbonizing the electricity sector and the role of dispatchable, low-carbon technologies** *INTERNATIONAL JOURNAL OF GREENHOUSE GAS CONTROL*
Baik, E., Siala, K., Hamacher, T., Benson, S. M.
2022; 113
- **A physics-informed data reconciliation framework for real-time electricity and emissions tracking** *APPLIED ENERGY*
de Chalendar, J. A., Benson, S. M.
2021; 304
- **What is different about different net-zero carbon electricity systems?** *ENERGY AND CLIMATE CHANGE*
Baik, E., Chawla, K. P., Jenkins, J. D., Kolster, C., Patankar, N. S., Olson, A., Benson, S. M., Long, J. S.
2021; 2
- **Long-Term Redistribution of Residual Gas Due to Non-convective Transport in the Aqueous Phase** *TRANSPORT IN POROUS MEDIA*
Li, Y., Orr, F. M., Benson, S. M.
2021
- **Quantifying CO₂ capillary heterogeneity trapping through macroscopic percolation simulation** *ADVANCES IN WATER RESOURCES*
Ni, H., Moyner, O., Kurtev, K. D., Benson, S. M.
2021; 155
- **Opportunities for large-scale CO₂ disposal in coastal marine volcanic basins based on the geology of northeast Hawaii** *INTERNATIONAL JOURNAL OF GREENHOUSE GAS CONTROL*
DePaolo, D. J., Thomas, D. M., Christensen, J. N., Zhang, S., Orr, F. M., Maher, K., Benson, S. M., Lautze, N., Xue, Z., Mito, S.
2021; 110
- **CCSNet: A deep learning modeling suite for CO₂ storage** *ADVANCES IN WATER RESOURCES*
Wen, G., Hay, C., Benson, S. M.

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- 2021; 155
- **A physics-based model to predict the impact of horizontal lamination on CO₂ plume migration** *ADVANCES IN WATER RESOURCES*
Boon, M., Benson, S. M.
2021; 150
 - **Seismic Wave Attenuation and Dispersion Due to Partial Fluid Saturation: Direct Measurements and Numerical Simulations Based on X-Ray CT** *JOURNAL OF GEOPHYSICAL RESEARCH-SOLID EARTH*
Chapman, S., Borgomano, J. M., Quintal, B., Benson, S. M., Fortin, J.
2021; 126 (4)
 - **Extreme capillary heterogeneities and in situ fluid compartmentalization due to clusters of deformation bands in sandstones** *INTERNATIONAL JOURNAL OF GREENHOUSE GAS CONTROL*
Romano, C. R., Garing, C., Minto, J. M., Benson, S. M., Shipton, Z. K., Lunn, R. J.
2021; 106
 - **Reliability of Relative Permeability Measurements for Heterogeneous Rocks Using Horizontal Core Flood Experiments** *SUSTAINABILITY*
Kuo, C., Benson, S. M.
2021; 13 (5)
 - **An improved procedure for sub-core property characterization using data from multiple coreflooding experiments** *INTERNATIONAL JOURNAL OF GREENHOUSE GAS CONTROL*
Anto-Darkwah, E., Benson, S. M., Rabinovich, A.
2021; 105
 - **Towards a predictor for CO₂ plume migration using deep neural networks** *INTERNATIONAL JOURNAL OF GREENHOUSE GAS CONTROL*
Wen, G., Tang, M., Benson, S. M.
2021; 105
 - **Description of Chemical Transport in Laboratory Rock Cores Using the Continuous Random Walk Formalism** *WATER RESOURCES RESEARCH*
Kurotori, T., Zahasky, C., Benson, S. M., Pini, R.
2020; 56 (9)
 - **Using Unsupervised Machine Learning to Characterize Capillary Flow and Residual Trapping** *WATER RESOURCES RESEARCH*
Ni, H., Benson, S. M.
2020; 56 (8)
 - **A continuum-scale representation of Ostwald ripening in heterogeneous porous media** *JOURNAL OF FLUID MECHANICS*
Li, Y., Garing, C., Benson, S. M.
2020; 889
 - **Subcore Scale Fluid Flow Behavior in a Sandstone With Cataclastic Deformation Bands** *WATER RESOURCES RESEARCH*
Romano, C. R., Zahasky, C., Garing, C., Minto, J. M., Benson, S. M., Shipton, Z. K., Lunn, R. J.
2020; 56 (4)
 - **Tracking emissions in the US electricity system.** *Proceedings of the National Academy of Sciences of the United States of America*
de Chalendar, J. A., Taggart, J., Benson, S. M.
2019
 - **An Overview of the Status and Challenges of CO₂ Storage in Minerals and Geological Formations** *FRONTIERS IN CLIMATE*
Kelemen, P., Benson, S. M., Pilorge, H., Psarras, P., Wilcox, J.
2019; 1
 - **Spatial and Temporal Quantification of Spontaneous Imbibition** *GEOPHYSICAL RESEARCH LETTERS*
Zahasky, C., Benson, S. M.
2019
 - **Macro-Energy Systems: Toward a New Discipline** *JOULE*
Levi, P. J., Kurland, S., Carbajales-Dale, M., Weyant, J. P., Brandt, A. R., Benson, S. M.
2019; 3 (10): 2282–86

- **CO2 plume migration and dissolution in layered reservoirs** *INTERNATIONAL JOURNAL OF GREENHOUSE GAS CONTROL*
Wen, G., Benson, S. M.
2019; 87: 66–79
- **Predicting CO2 residual trapping ability based on experimental petrophysical properties for different sandstone types** *INTERNATIONAL JOURNAL OF GREENHOUSE GAS CONTROL*
Ni, H., Boon, M., Garing, C., Benson, S. M.
2019; 86: 158–76
- **Why 100% Renewable Energy Is Not Enough** *JOULE*
de Chalendar, J. A., Benson, S. M.
2019; 3 (6): 1389–93
- **The energetic implications of introducing lithium-ion batteries into distributed photovoltaic systems** *SUSTAINABLE ENERGY & FUELS*
Kurland, S., Benson, S.
2019; 3 (5): 1182–90
- **Positron emission tomography in water resources and subsurface energy resources engineering research** *ADVANCES IN WATER RESOURCES*
Zahasky, C., Kurotori, T., Pini, R., Benson, S. M.
2019; 127: 39–52
- **City-scale decarbonization experiments with integrated energy systems** *ENERGY & ENVIRONMENTAL SCIENCE*
de Chalendar, J. A., Glynn, P. W., Benson, S. M.
2019; 12 (5): 1695–1707
- **Measuring, imaging and modelling solute transport in a microporous limestone** *CHEMICAL ENGINEERING SCIENCE*
Kurotori, T., Zahasky, C., Hejazi, S., Shah, S. M., Benson, S. M., Pini, R.
2019; 196: 366–83
- **CO2 Wettability of Sandstones: Addressing Conflicting Capillary Behaviors** *GEOPHYSICAL RESEARCH LETTERS*
Garing, C., Benson, S. M.
2019; 46 (2): 776–82
- **Carbon Mineralization of CO2** *NEGATIVE EMISSIONS TECHNOLOGIES AND RELIABLE SEQUESTRATION: A RESEARCH AGENDA*
Pacala, S., Al-Kaisi, M., Barteau, M. A., Belmont, E., Benson, S. M., Birdsey, R., Boysen, D., Duren, R., Hopkinson, C., Jones, C., Kelemen, P., Levasseur, A., Paustian, et al
2019: 247–318
- **Experimental Investigation of a Capacity-Based Demand Response Mechanism for District-Scale Applications**
de Chalendar, J. A., Glynn, P. W., Benson, S. M., Bui, T. X.
HICSS.2019: 3709-3718
- **Coreflooding data on nine sandstone cores to measure CO2 residual trapping.** *Data in brief*
Ni, H. n., Boon, M. n., Garing, C. n., Benson, S. M.
2019; 25: 104249
- **Synthesis** *NEGATIVE EMISSIONS TECHNOLOGIES AND RELIABLE SEQUESTRATION: A RESEARCH AGENDA*
Pacala, S., Al-Kaisi, M., Barteau, M. A., Belmont, E., Benson, S. M., Birdsey, R., Boysen, D., Duren, R., Hopkinson, C., Jones, C., Kelemen, P., Levasseur, A., Paustian, et al
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