Stanford

Bolivia Vega

Research Engineer, Energy Science & Engineering

Bio

CURRENT ROLE AT STANFORD

Research Engineer at the Energy Science & Engineering Department, Doerr School of Sustainability

Executive Director of the Center for Mechanistic Control of Unconventional Formations (CMC-UF) (2018 - 2024)

LINKS

- Google Scholar: https://scholar.google.com/citations?user=1fo2aKsAAAAJ&hl=en

Professional

PROFESSIONAL INTERESTS

I am an experimentalist with focus on transport in porous media and energy transition.

My work is currently dedicated to natural or geological hydrogen and geological CO2 storage.

Other research interests include the use of imaging as a tool to characterize tight porous media. I have worked in multimodal imaging across nano, micro, and meso scales for unconventional resources characterization and EOR.

PROFESSIONAL AFFILIATIONS AND ACTIVITIES

- SPE Membership Committee, SPE (2016 - 2019)
- SPE Section and Chapter Activities Committee Chair, SPE (2015 - 2016)
- SPE Section and Chapter Activities Committee, SPE (2014 - 2015)
- SPE Section Director I, SPE Golden Gate Section (2013 - 2014)
- SPE Section Chair, SPE Golden Gate Section (2012 - 2013)
- SPE Western Regional Meeting Co-chair, SPE Western Regional Meeting (2012 - 2013)
- SPE Section Vice-chair, SPE Golden Gate Section (2011 - 2012)
- SPE Section Secretary and Webmaster, SPE Golden Gate Section (2008 - 2011)

Publications

PUBLICATIONS

- **Coupled Transport, Reactivity, and Mechanics in Fractured Shale Caprocks** *WATER RESOURCES RESEARCH*
  Murugesu, M. P., Vega, B., Ross, C. M., Kurotori, T., Druhan, J. L., Kovscek, A. R.
  2024; 60 (1)

- **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

- **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

- **Nano-imaging of Diatomite with Transmission X-ray Microscope** *Album of Porous Media: Structure and Dynamics*
  Vega, B., Kovscek, A. R.
  Springer International Publishing.2023: 113

- **Study of Stress Field and Fracture Network Development With Rock Analogs** *Album of Porous Media: Structure and Dynamics*
  Vega, B., Kovscek, A. R.
  Springer International Publishing.2023: 89

- **Fractal Characterization of Multimodal, Multiscale Images of Shale Rock Fracture Networks** *ENERGIES*
  Vega, B., Kovscek, A. R.
  2022; 15 (3)

- **2D-to-3D image translation of complex nanoporous volumes using generative networks.** *Scientific reports*
  Anderson, T. I., Vega, B., McKinzie, J., Aryana, S. A., Kovscek, A. R.
  2021; 11 (1): 20768

- **RockFlow: Fast Generation of Synthetic Source Rock Images Using Generative Flow Models** *ENERGIES*
  Anderson, T. I., Guan, K. M., Vega, B., Aryana, S. A., Kovscek, A. R.
  2020; 13 (24)

- **Multimodal imaging and machine learning to enhance microscope images of shale** *COMPUTERS & GEOSCIENCES*
  Anderson, T., Vega, B., Kovscek, A. R.
  2020; 145

- **Investigation of Stress Field and Fracture Development During Shale Maturation Using Analog Rock Systems** *TRANSPORT IN POROUS MEDIA*
  Vega, B., Yang, J., Tchelepi, H., Kovscek, A. R.
  2019

- **A systematic study of internal gas generation in shale source rocks using analog experiments** *JOURNAL OF PETROLEUM SCIENCE AND ENGINEERING*
  Vega, B., Kovscek, A. R.
  2019; 173: 209–21

- **Detecting Opal-CT Formation Resulting from Thermal Recovery Methods in Diatomites.** *SPE Western Regional Meeting*
  Ross, C. M., Vega, B., Peng, J., Ikeda, M., Lagasca, J. R., Tang, G., Kovscek, A. R.
  2016

- **Imaging-Aided Study of Relative Permeability Response to Temperature in Diatomaceous Rocks** *SPE Western Regional Meeting*
  Vega, B., Kovscek, A. R.
  2015

- **Imaging-Based Characterization of Calcite-Filled Fractures and Porosity in Shales** *SPE Journal*
  Vega, B., Ross, C. M., Kovscek, A. R.

2015

- **Steady-State Relative Permeability Measurements, Temperature Dependency and a Reservoir Diatomite Core Sample Evolution** *SPE Annual Technical Conference and Exhibition*
  Vega, B., Kovscek, A. R.
  2014

- **CT Imaging of Low Permeability, Dual Porosity Systems Using High X-Ray Contrast Gas** *Transport in Porous Media*
  Vega, B., Dutta, A., Kovscek, A. R.
  2014; 101 (1): 81-97

- **Nanoscale visualization of Gas Shale Pore and Textural Features** *Unconventional Resources Technology Conference*
  Vega, B., Andrews, J., Liu, Y., Gelbs, J., Kovscek, A. R.
  2013

- **Thermally Induced Fracture Reconsolidation of Diatomite Under No Flow Conditions** *SPE Western Regional Meeting*
  Vega, B., Tang, G., Kovscek, A. R.
  2011

- **The Effect of Temperature and Oil Viscosity Reduction on Water Imbibition of Diatomite** *SPE Western Regional Meeting*
  Vega, B., Kovscek, A. R.
  2010

- **Experimental Investigation of Oil Recovery From Siliceous Shale by Miscible CO2 Injection** *SPE Annual Technical Conference and Exhibition*
  Vega, B., O'Brien, W. J., Kovscek, A. R.
  2010

- **Storage of Greenhouse Gases in Oil and Gas Reservoirs** *Developments and innovation in carbon capture and storage (CCS) technology*
  Kovscek, A. R., Vega, B.
  Woodhead Publishers.2009

- **Experimental Investigation of Oil Recovery From Siliceous Shale by CO2 Injection** *SPE Annual Technical Conference and Exhibition*
  Vega, B., Kovscek, A. R., Tang, G.
  2008

- **Relative Permeability Curves for Solution Gas Drive in Heavy Oils** *X Colombian Oil Congress*
  Vega, B.
  2003

- **Treatment of Waste Water/Oil Emulsions Using Microwave Radiation** *SPE Health, Safety and Environment Conference*
  Vega, C., Delgado, M., Vega, B.
  2002