

Roger Aines

Position/Department/Division/Institution/Organization

Energy Program Chief Scientist, Lawrence Livermore National Laboratory

Country

USA

Career history

Roger Aines is the Chief Scientist of the Energy Program at Lawrence Livermore National Laboratory. He holds a Bachelor of Arts degree in Chemistry from Carleton College, and Doctor of Philosophy in geochemistry from the California Institute of Technology.

Roger leads the Carbon Initiative at LLNL, which aims to understand, develop, and implement technologies for the removal of carbon dioxide from the atmosphere, so-called *negative emissions technologies*. He has been at LLNL since 1984 working on nuclear waste disposal, environmental remediation, application of stochastic methods to inversion and data fusion, management of carbon emissions including separation technology, and monitoring and verification methods for sequestration.

Awards/Publications

Twenty-two patents in the areas of carbon capture and environmental cleanup and has over eighty publications. With Amy Aines he authored the recently released *Championing Science*, a book that helps scientists communicate more effectively with decision makers.

Recent Publications

Book

Aines, Roger D. and Amy L. Aines (2019) *Championing Science: Communicating Your Ideas to Decision Makers*. Oakland, California: [University of California Press](#), 272 pp.

Chapter in 'Atmospheric Carbon Extraction: Scope, Available Technologies and Challenges' in *Bending the Curve: Climate Change Solutions*. Editor: V. Ramanathan. Co-Editors: Adam Millard-Ball; Michelle Niemann; Scott Friese. Published by the Regents of the University of California. <https://escholarship.org/uc/item/6kr8p5rq>.

Journal Articles and Reports

Kelemen, PB, **R Aines**, E Bennett, SM Benson, E Carter, JA Coggon, JC de Obeso, O Evans, G Gadikota, GM Dipple, M Godard, M Harris, JA Higgins, KTM Johnson, F Kourim, R Lafay, S Lambart, CE Manning, JM Matter, K Michibayashi, T Morishita, J Noël, K Okazaki, P Renforth, B Robinson, H Savage, R Skarbek, MW Spiegelman, E Takazawa, D Teagle, JL Urai, J Wilcox (2018) In situ carbon mineralization in ultramafic rocks: Natural processes and possible engineered methods. [Energy Procedia](#)
[Volume 146, July 2018, Pages 92-102.](#)

Sandalow, David, **Roger Aines**, Julio Friedmann, Colin McCormick, and Sean McCoy (2017) Carbon Dioxide Utilization (CO₂U) ICEF Roadmap 2.0. Prepared to facilitate dialogue at the Fourth Innovation on for Cool Earth Forum (Tokyo October 2017). [Lawrence Livermore National Laboratory Report, TR739322.](#)

Buscheck, TA; Bielicki, JM; White, JA; Sun, Y; Hao, Y; Bourcier, WL; Carroll, SA; **Aines, RD** (2016) Pre-injection brine production in CO₂ storage reservoirs: An approach to augment the development, operation, and performance of CCS while generating water. [International Journal Of Greenhouse Gas Control Volume: 54 Pages: 499-512](#) Part: 2 DOI: 10.1016/j.ijggc.2016.04.018

Vericella, John J. Sarah E. Baker, Joshua K. Stolaroff, Eric B. Duoss, James O. Hardin IV, James Lewicki, Elizabeth Glogowski, William C. Floyd, Carlos A. Valdez, William L. Smith, Joe H. Satcher Jr., William L. Bourcier, Christopher M. Spadaccini, Jennifer A. Lewis, and **Roger D. Aines** (2015) "Encapsulated Solvents for Carbon Dioxide Capture" [Nature Communications 6, Article number: 6124](#) doi:10.1038/ncomms7124 Published 05 February 2015

Kim, J., A. Maiti, L.-C. Lin, J. K. Stolaroff, B. Smit, and **RD Aines**, (2013) "New Materials For Methane Capture From Dilute And Medium-Concentration Sources" [Nature Communications 10.1038/ncomms2697.](#)

Areas of expertise

Responsible for managing and leading the Carbon Initiative, which aims to understand, develop, and implement technologies for the removal of carbon dioxide from the atmosphere, so-called *negative emissions technologies*. Roger's career has involved a close coupling of scientific research, engineering, field demonstration, and assessment of future development needs for technology. Research interests include the chemistry of natural and engineered processes, including carbon dioxide separation and water treatment and current research includes application of 3-D printing to chemical reactors and gas separations, development of catalysts for carbon dioxide capture, management of pressure in geologic sequestration through brine withdrawal and treatment, and encapsulation of carbon dioxide capture solvents. Previously led LLNL's Carbon Management Program, which takes an integrated view of the energy, climate, and environmental aspects of carbon-based fuel production and use. It supports DOE projects in sequestration technology development for capture, and carbon recycling.