

Kurt Zenz House

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EDUCATION

2004 – 2008 **Harvard University**, Ph.D. Geologic Sciences (*expected fall 2008*)
1997 – 2001 **Claremont McKenna College**, B.A. Physics, *Magna Cum Laude*

EXPERIENCE - SCIENCE & TECHNOLOGY

2008- **Massachusetts Institute of Technology**, KAUST Research Fellow (*expected to start fall 2008*)
- Study of subsurface flow & chemistry of supercritical & liquid CO₂ for CO₂ storage
- Technological & economic analysis of Fischer-Tropsch synthetic fuel production with biomass/coal co-firing and CO₂ capture & storage of the process CO₂

2004-2008 **Harvard University**, Ph.D.
Thesis: *On the Physics & Chemistry of Carbon Dioxide Capture & Storage in Terrestrial & Marine Environments*
- Computational study of the geo-mechanics and the multi-phase-fluid-flow of CO₂ injected into deep-sea sediments with the dynamic formation of gas-hydrates
- Application of electrochemistry to accelerate global chemical weathering for the mitigation of anthropogenic climate change
- Evaluation of the physical limits and the energetics of CO₂ capture and storage

2000 **Stanford University & Affymetrix, Inc.**, National Science Foundation Fellow
Applied contrast enhancement lithography to reduce the feature size of the GeneChip[®] technology

1999 **Claremont College Joint Science Department**, Research Assistant
Wrote Monte Carlo simulations characterizing cosmic ray distributions by galaxy size

EXPERIENCE - BUSINESS & LEADERSHIP

2001 – 2003 **Bain & Company**, Associate Consultant
Several consulting engagements including: three corporate strategy projects for fortune 500 companies, a strategy project for a small optical component company, and an engagement to advise a private-equity firm on several public-equity investments

2008 **Charles River Ventures (CRV)**
Independent advisory engagement with CRV to analyze the technological possibilities and market opportunities of a wide range of energy technologies

2007 **Harvard Business School (HBS)**
Three-time project sponsor & group leader for the HBS course *Commercializing Science and Technology*. Project sponsors are Harvard scientists who have developed proprietary technology for potential commercialization

2005 – Present **The Harvard Energy Journal Club (HEJC)**
Co-founder of the HEJC, which facilitates discussion and understanding of energy science, energy technology, and energy business. The organization grew from 3 members to over 150 in 2 years

1996 – 1997 **San Marino High School**
Capitan of varsity football and track teams

EXPERIENCE –TEACHING

2006 – 2007 **Harvard University's School of Engineering & Applied Sciences**
Three-time head teaching fellow for Applied Mathematical Modeling (AM 115)

PEER-REVIEWED PUBLICATIONS

- 2008 *The Energy Penalty of Post-Combustion CO₂ Capture & Storage and its Implications for Retrofitting the U.S. Installed Base (in Review at Energy & Environmental Science)*
Kurt Zenz House, Daniel P. Schrag, Michael J. Aziz, Charles F. Harvey
- 2007 *Electrochemical Acceleration of Chemical Weathering as an Energetically Feasible Approach to Mitigating Anthropogenic Climate Change*
Kurt Zenz House, Christopher H. House, Daniel P. Schrag, Michael J. Aziz
Environ. Sci. Technol., 41 (24), 8464–8470, November 7, 2007
- 2006 *Permanent carbon dioxide storage in deep-sea sediments*
Kurt Zenz House, Daniel P. Schrag, Charles F. Harvey, Klaus S. Lackner
Proceedings of the National Academy of Sciences, Vol. 203, No. 33 (2006)

Expected to be submitted in 2008

- Pressure dissipation as a limiting resource for geologic storage of CO₂*
Kurt Zenz House, Daniel P. Schrag, Charles F. Harvey
- Reassessing the Greenhouse Gas Mitigating Potential of Cellulosic Biofuels*
James Hansen, Kurt Zenz House, Mark Laser, Lee Lynd, Heather MacLean, Keith Paustian
- The Injection Feasibility & Long Term Fate of CO₂ Injected into Deep-sea Sediments*
Kurt Zenz House, Charles F. Harvey, Daniel P. Schrag

Non-refereed publications

- 2008 *Breaking the Tyranny of Oil*
Kurt Zenz House, Bulletin of the Atomic Scientist, July 1st, 2008
- 2008 *The Upside to FutureGen's Demise*
Kurt Zenz House, Bulletin of the Atomic Scientist, May 5th, 2008

PATENTS FILED

- Carbon Dioxide Capture and Related Processes*
Primary inventor of a novel chemical process that removes CO₂ from the atmosphere and stores it permanently—International patent filed by Harvard University

INVITED SEMINARS

- 2008 **Kalvi Institute for Theoretical Physics, UCSB, May 10th**
The Difficulty & Possibility of Geo-engineering
- 2008 **Pennsylvania State University Department of Geosciences Seminar, April 29**
The Economic Geology of Carbon Dioxide Capture and Storage
- 2008 **University of Chicago, April 3rd - 4th**
The Economic Geology of Carbon Dioxide Capture and Storage
The Possibility and Difficulty of Engineering Oceanic and Atmospheric Composition
- 2007 **Stanford University Global Climate & Energy Program Seminar, October 23rd**
Electrochemical Acceleration of Chemical Weathering as an Energetically Feasible Approach to Mitigating Anthropogenic Climate Change
- 2007 **Jones Seminars on Science, Technology, and Society at the Thayer School of Engineering, Dartmouth College, September 28th**
Closing the Carbon Loop and Burying Global Warming

- 2007 **New Hampshire Audubon Society**, June 21st
Closing the Carbon Loop and Burying Global Warming
- 2006 **Chevron Corporation Geosciences Seminar**, August 15th
Carbon Dioxide Capture & Storage as a Means to Close the Carbon Loop
- 2006 **Pennsylvania State University Department of Geosciences Seminar**, July 11th
Electrochemical Acceleration of Global Chemical Weathering as a Means for the Removal of Atmospheric Carbon Dioxide

CONFERENCE PRESENTATIONS

- 2006 **The 8th Greenhouse Gas Technology Conference, Trondheim, Norway**
Permanent carbon dioxide storage in deep-sea sediments, June 18th
- 2005 **American Geophysical Union Conference**
Permanent carbon dioxide storage in deep-sea sediments, December 7th

SPECIAL HONORS

- 2008 KAUST (King Abdullah University of Science & Technology) fellowship for independent research at MIT (full funding from 2009 – 2010)
- 2007 Esquire Magazine 36 Best & Brightest for 2007
- 2006 Derek Bok Certificate of Distinction for Outstanding Teaching at Harvard University
- 2005 Link Foundation Energy Fellowship
- 2000 National Science Foundation Research Experience for Undergraduate Fellowship
- 1996 1st Team All California Interscholastic Federation Defensive End