

Arthur D. Storke Professor, Dept. of Earth & Environmental Sciences, Columbia University
 Lamont Doherty Earth Observatory, Palisades NY 10964
 email: peterk@ldeo.columbia.edu, web: <http://www.ldeo.columbia.edu/user/peterk>

Education

- 1987 Ph.D., University of Washington. Thesis advisor: Dr. Bernard Evans. Assimilation of Ultramafic Rock in Fractionating Magma.
 1985 M.Sc., University of Washington. Research Project advisor: Dr. Bernard Evans. Geology of the Big Jim Complex, Washington Cascades.
 1980 A.B. cum laude, with high distinction in Earth Sciences, Dartmouth College.

Academic Employment & Awards

- 2019–present Member, Mars 2020 Rover Science Team
 2017–19 Member, NAS Committee on Carbon Dioxide Removal from Air & Reliable Sequestration
 2017–18 Associate Chair, Dept. of Earth & Environmental Sciences, Columbia University
 2014–present Chief Scientist and one of three lead PI's, ICDP Oman Drilling Project
 2014–present Member, US National Academy of Sciences
 2014–17 Chair, Dept. of Earth & Environmental Sciences, Columbia University
 2014–16 Lenfest Distinguished Columbia Faculty Award, Columbia University
 2013–16 Diamond Jubilee International Fellow & Visiting Prof., University of Southampton
 2013–present Geochemistry Fellow, Geochemical Society & European Assoc Geochemistry
 2012–14 Vice Chair, Dept. of Earth & Environmental Sciences, Columbia University
 2012 Chapman Lecturer, University of Alaska
 2012 Chair, Gordon Conference on Rock Deformation
 2010 Vice Chair, Gordon Conference on Rock Deformation
 2010 CIRES Distinguished Lecturer, University of Colorado
 2009 Visiting Professor, Université de Lausanne
 2008 MARGINS Distinguished Lecturer
 2007 Hallimond Lecturer, Mineralogical Society
 2006–present Fellow, Mineralogical Society of America
 2004–present Arthur D. Storke Professor, Dept. of Earth & Environmental Sciences, Columbia University
 Associate Research Scientist, Dept. Earth & Planetary Sciences, American Museum of Natural History
 Adjunct Scientist, Woods Hole Oceanographic Institution
 Fellow, American Geophysical Union
 2004 Bowen Award, Volcanology, Geochemistry, Petrology Section, AGU
 2003 Co-Chief Scientist, Ocean Drilling Program Leg 209 (May–June 2003)
 2001–04 Charles Francis Adams Chair, Woods Hole Oceanographic Institution
 2000–04 Senior Scientist, Woods Hole Oceanographic Institution
 1997–00 Tenured Associate Scientist, Woods Hole Oceanographic Institution
 1994–97 Associate Scientist, Woods Hole Oceanographic Institution
 1993 Visiting Scientist, CNRS Centre Géologique et Géophysique, Montpellier, France
 1990–94 Assistant Scientist, Woods Hole Oceanographic Institution
 1990 Postdoctoral Investigator, Woods Hole Oceanographic Institution
 1990 Visiting Assistant Professor of Earth Sciences, Dartmouth College
 1988–90 Postdoctoral Scholar, Woods Hole Oceanographic Institution
 1988 Postdoctoral Research Associate, University of Washington
 1981–87 NSF Graduate Fellow, Research Assistant, Teaching Assistant, Univ. Washington
 1980–81 Reynolds Fellowship for Foreign Study, Dartmouth College, shared with Mark Sonnenfeld (Dartmouth '80): geologic mapping, NW Himalaya, India

Professional Employment

- 2019-present Consultant on Carbon Mineralization for CO2 Removal from Air and Permanent Storage, for Jeremy and Hannelore Grantham Environmental Trust's 'Neglected Climate Opportunities LLC, and for Worcester Polytechnic Institute
- 1980-92 Founding partner, Dihedral Exploration, mineral exploration consultants, mapping and sampling potential ore deposits in steep terrain. **British Columbia:** Bull Moose Resources 81; Falconbridge Ltd. 83; Geddes Resources 87; **Alaska:** Klukwan Iron Ore 83; Noranda 84; Long Lac Minerals 85; Cominco 86, 87, 88; **Greenland:** Platinova Resources Ltd. 88-91.
- 1978 Physical Science Aide, U.S. Army Cold Regions Research and Engineering Laboratory (CRREL), Hanover, NH. Modeling of climate, north slope of Alaska.

Primary doctoral advisor to:

Jun Korenaga	(WHOI/MIT 1999)	Einat Aharonov	(WHOI/MIT 1995)
Jill VanTongeren	(Columbia 2009)	Mike Braun	(WHOI/MIT 2004)
Janelle Homburg	(Columbia 2012)	Martin Collier	(Columbia 2010, co-advisor)
Lisa Streit	(Columbia 2013)	Juan Carlos de Obeso	(Columbia 2020)

Generals committee/PhD committee member for:

Lucy Tweed	(Columbia 2021)		
Dan Nothaft	(Colorado 2021)	Hannah Miller	(Colorado 2016)
Ole Ivar Ulven	(Oslo 2014)	Nicholas Dygert	(Brown 2014)
Alex Lloyd	(Columbia 2014)	Amelia Paukert	(Columbia 2014)
Greeshma Gadikota	(Columbia 2013)	Ed Swanson	(Columbia 2013)
Antonio Buono	(Columbia 2011)	Wei Du	(Columbia, 2011)
Jason Jweda	(Columbia 2011)	Evelyn Mervine	WHOI/MIT 2011)
Byrdie Renick	(Columbia 2009)	Chris Waters	(WHOI/MIT 2009)
Sam Krevor	(Columbia, 2008)	Pierre Bouilhol	(ETH-Z, 2008)
Matthew Jackson	(WHOI/MIT 2008)	Kyla Simons	(Columbia, 2008)
Gideon Simpson	(Columbia, 2008)	Lynne Elkins	(WHOI/MIT 2008)
Jason Bryant	(Univ. S. Carolina 2008)	Nicholas Austin	(MIT; 2008)
Jessica Warren	(WHOI/MIT, 2007)	Michael Johnsen	(W Wash U, MSc 2007)
Kevin Wheeler	(Columbia 2007)	Richard Katz	(Columbia 2006)
Anna Cipriani	(Columbia, 2006)	Zachary Morgan	(Brown 2006)
Matt Rioux	(UCSB 2005)	Andrew Greene	(W Wash U, MSc 2003)
Mark Behn	(WHOI/MIT; 2003)	Robyn Kelly	(WHOI/MIT; 2003)
Ken Koga	(WHOI/MIT; 1998)	Mathieu Benoit	(Toulouse; 1997)
Eichi Takazawa	(MIT; 1996)	Dan Lizaralde	(WHOI/MIT; 1996)
Carlos Garrido	(Granada; 1995)	Margarite Godard	(Montpellier; 1993)
Malika Remaidi	(Montpellier; 1993)	Jon Snow	(WHOI/MIT; 1993)

Postdocs supervised

Carlos Garrido	(1995-98)	Matthew Jull	(1998-02)	Othmar Muentener	(1998-99)
Karen Hanghøj	(1999-00)	Laurent Montesi	(2001-02)	Magali Billen	(2002-03)
Ben Holtzman	(2004-05)	Taber Hersum	(2005-06)	John Rudge	(2007-08)
Stacia Gordon	(2010)	Kristoffer Szilas	(2012-14)	Sarah Lambart	(2013-15)

Courses

- 2011-present Co-convenor, with A. Hofmann and others, Solid Earth Geochemistry seminar
- 2010-present Earth Resources and Sustainable Development, Columbia University
- 2007 Graduate field course, Columbia, Brown, ... with Greg Hirth
- 2006-present Introduction to Petrology, Columbia University, every other spring
- 2005-present Reading seminars in petrology & geochemistry, usually Fall semester
- 2006-present Co-convenor, with T. Plank, E. Lev, Lamont Geodynamics Seminar, both semesters
- 2004-12 Earth: Origin, Evolution, Processes, Future, Columbia University
- 2003 Graduate field course WHOI, MIT, Brown University, with Greg Hirth
- 2002 Convenor of Geodynamics Seminar (Joint Program course 12.753)

1995-04 WHOI/MIT Joint Graduate Program, Igneous Processes ..., Fall every other year
 1992-04 Co-Convenor, WHOI Geochemistry Seminar
 1989-2004 WHOI Keck Geodynamics Seminar participant and planning committee

Outreach and Community Service

Outreach publications

P.B. Kelemen, Melt extraction from the mantle beneath ocean ridges, [Oceanus](#) 41, 23-28, 1998
 P.B. Kelemen, Unraveling the tapestry of oceanic crust, [Oceanus](#) 42, 40-43, 2004.
 P.B. Kelemen, The origin of the land under the sea, [Scientific American](#) 300, no. 2, 52-57, Feb. 2009
 Fall 2009 op ed pieces in [Popular Mechanics](#) and [Huffington Post](#)
 Fall 2012 op ed piece in [Popular Mechanics](#)
 Spring 2013 op ed piece in NY Times, Dot Earth, [here](#)

Outreach presentations

Columbia Capital Campaign Climate Response Task Force 2019, Columbia Trustees 2019, Earth Institute series 2018; Alliance Bernstein panel discussion 2010; Annual Coalition for National Science Funding (CNSF) Exhibition and Reception on March 2009; BP Panel on Air Capture of CO₂, 2009; Brearley School, NY 2012; Bruce Museum, Greenwich CT 2012; Children's School of Science, Woods Hole MA, 2005; Columbia University Energy Symposium Technology Showcase, April 2011; Columbia Westchester Alumni Assoc 2006; Earth2Class Workshop for Teachers, NY 2007; Explorer's Club NY 2005, 2012; Farragut Middle School, Hastings on Hudson NY, 2005, 2011; Hillside Elementary School, Hastings on Hudson, NY 2005-2007; JP Morgan Private Bank short course 2009; Lamont Advisory Board 2006, 2009, 2011; Lamont Doherty Earth Observatory, Earth Day presentation 2012; MARGINS Distinguished Lecturer 2007-08; Mullen Hall School, Falmouth MA, 2003, 2004; Riverdale Country School, NY 2008, 2009; Trinity School, NY 2012; Science-Engineering-Technology Congressional Visits Day (SET-CVD) for AGU, April 2011, 2012

Science planning

2017-18 NAS/NRC Committee: Research Agenda for Carbon Dioxide Removal from Air & Reliable Sequestration
 2015-17 NAS/NRC Committee: Review of NASA's Planetary Sciences R&A Programs,
 5/15 Member, DOE BES Roundtable on Foundational Research Relevant to SubTER
 12/13 Convener, GeoPRISMS Workshop on Logistics in the Aleutian Arc
 9/12 Convener: ICDP Workshop on Scientific Drilling in the Samail ophiolite, Oman
 9/11: keynote: GeoPRISMS Alaska Workshop
 9/11: keynote: EarthScope Workshop on the Lithosphere/Asthenosphere Boundary
 1/11: keynote: IODP/ICDP Workshop on Mineral Carbonation for CO₂ Storage, Oman
 9/10: keynote, IODP & Deep Carbon Observatory Workshop, Reaching the Mantle Frontier, DC
 9/09: keynote, Integrated Ocean Drilling Program (IODP) Decadal Science Planning, Bremen, GE
 7/09: keynote, InterRidge Planning Meeting, Southampton UK
 6/09: rapporteur, air capture of CO₂, National Acad. Sci. Workshop on Geoengineering
 3/09: invited participant, American Physical Society CO₂ Air Capture Meeting, Princeton Univ.
 3/09: presentation, Coalition for National Science Funding Exhibition for the US Congress
 2/09: invited speaker, British Petroleum CO₂ Capture from Air Symposium, New York
 08-present: member CO₂ Sub-Committee, Soc. Exploration Geophysicists Research Committee
 11/07: Keynote speaker MARGINS Izu-Bonin-Marianas Workshop
 3/07 Lead Proponent (1 of 5), Mission Moho Proposal, IODP
 9/06: Keynote speaker, IODP Mission Moho Workshop
 04: keynote, RIDGE2000 Slow Spreading Ridge Workshop
 02: keynote, MARGINS Izu-Bonin-Marianas Workshop
 00: keynote, RIDGE 2000 Integrated Studies Workshop
 99: NSF OCE Decadal Planning Meetings (Working Group 6, Solid Earth)

- 99: COMPLEX Meeting, Vancouver, BC, planning International Ocean Drilling Program
- 98: Subduction Factory Workshop, NSF MARGINS Initiative
- 98- ..., Member, Architecture of Oceanic Lithosphere Program Planning Group, ODP
- 97-..., Member, InterRidge Working Group on 4D Architecture of Oceanic Lithosphere
- 96: Invited participant, JOI/CORE Workshop on the Future of Marine Geosciences
- 96: keynote, ODP-INTERIDGE-IAVCEI Workshop on the Oceanic Lithosphere and Scientific Drilling into the 21st Century
- 94: RIDGE Workshop: Exper. Approaches to Ridge Segment Structure & Dynamics (RISES)
- 93: JOI Workshop on Magmatism and Mass Flux at Continental Margins
- 90: JOI/USSAC Workshop on Large Igneous Provinces
- 90: ONR Workshop on the Physical Properties of Volcanic Seafloor
- 89: JOI/USSAC Workshop on Drilling the Oceanic Lower Crust and Mantle

Meeting and short course convener

- 1/20 Convener, “International Conference on Ophiolites & the Oceanic Lithosphere”, Muscat, Oman
- 12/18 Convener, AGU Session, “Initial Results of the Oman Drilling Project, Phase II”
- 11/18 Convener, Royal Society of London, “Serpentine in the Earth System”
- 12/17 Convener, AGU Session, “Initial Results of the Oman Drilling Project, Phase I”
- 7/15 Convener, Goldschmidt Conference Session, “Making intermediate magmas: from the Archean to the present”, Prague
- 1/15 Field trip leader & meeting host, Executive Committee, Deep Carbon Observatory,
- 12/14 Convener, Pre-AGU, IODP Hard-Rock Drilling Meeting
- 12/14 Convener, Pre-AGU Meeting, Oman Drilling Project
- 12/14 Convener, AGU Session, “Achieving negative carbon emissions: Distributed carbon capture from air and surface water using geologic materials and/or storage reservoirs
- 12/13 Convener, AGU Session, “Natural mechanisms of mineral carbonation, hydration and oxidation & potential applications including carbon capture and storage”
- 12/13 Convener, GeoPRISMS Aleutian Logistics Workshop
- 9/12 Convener, keynote, [ICDP Workshop on Scientific Drilling in the Samail ophiolite, Oman](#)
- 8/12 Chair, keynote, Gordon Conference on Rock Deformation
- 1/12 Scientific committee, [Int’l Conf on Geology Arabian Plate & Oman Mtns](#) , Oman
- 1/11 Convener, [IODP/ICDP Workshop on Mineral Carbonation](#), Muscat, Oman
- 8/10 vice-chair, Gordon Conference on Rock Deformation
- 9/08 Convener, Chapman Conf./5th Int’l Workshop on Orogenic Lherzolites, Mt Shasta, CA
- 7/06 Convener, Penrose Conference on Arc Crustal Genesis and Evolution, Valdez, Alaska
- 12/05 Convener AGU Special Session, Results from Talkeetna Arc Continental Dynamics Project
- 6/05 Convener, ODP Leg 209 Scientific Meeting, Samani, Japan
- 04 Convener, Goldschmidt Conf. Special Session on Slow- and Ultra-Slow Spreading Ridges
- 02 Organizing committee, 4th Int’l Workshop Orogenic Lherzolites ..., Hokkaido, Japan
- 00 Scientific Organizing Committee, International Conference on the Geology of Oman
- 99 Convener, Fall AGU Special Session on Results of MODE 98 Cruises
- 99 Organizing committee, 3rd International Workshop Orogenic Lherzolites ..., Pavia, Italy
- 99 Convener, Goldschmidt Conference Session on Continental Genesis
- 99 Convener Spring AGU Special Session on Melt Migration in the Mantle and Lower Crust
- 1/98 Convener, RIDGE Winter School on Oman ophiolite
- 97 Convener, Fall AGU Special Session on Origin of Cratonic Mantle
- 95 Organizing committee, 2nd Int’l Workshop Orogenic Lherzolites ..., Granada, Spain

Press coverage: paper: print, radio and video including NY Times 18, Atlantic 18, Deep Carbon Observatory 18, Associated Press 17, Columbia Magazine 13, The Economist 08, Christian Science Monitor 09, Popular Mechanics 09, OnEarth (NRDC) 09, NPR Earth & Sky 08, BBC Naked Scientists 08, MSNBC 08, ABC Online 08, Der Spiegel 08, Times of India 08, Times of Oman 08, Shanghai Daily 08, China Post 08, Frankfurter Allgemeine Zeitung 08, El Mundo 08, El Pais 08, Technology Review 08, 10, Physics Today 08, Nature Reports 08

Field Work

1976-77 two mo/yr climbing & sampling snow for 18O/16O study, Cordillera Blanca, Peru
 1980 5 mos reconnaissance mapping of Indus Suture Zone, Spongtang Ophiolite, and “Tibetan Zone”, Ladakh, NW India
 1981 2 wks, Ag and Au exploration, Snippaker valley, Iskut Region, British Columbia
 1981-83 4 mos mapping, Big Jim intrusion, Mt. Stuart batholith, Washington
 1983 1 mo mapping and sampling, Kigluaik Mountains, Seward Peninsula, Alaska
 1983 2 wks Pt, Pd exploration, Klukwan ultramafic intrusion, SE Alaska
 1983, 87 6 wks, Cu and Au exploration, Windy Craggy massive sulfide deposit, St Elias Mountains, British Columbia
 1984 2 mos climbing & thermochronology sampling, Gasherbrum IV, Karakoram Range, Pakistan
 1984-85 2 mos Au, Ag, Zn exploration, Prince of Wales Island, SE Alaska
 1985-86 3 wks mapping and sampling, Emigrant Gap intrusion, Sierra Nevada, California
 1986-87 3 wks mapping and sampling Chilliwack batholith, N Cascades, Washington
 1986-88 3 wks Au exploration, Rainy Pass area, Alaska Range, central Alaska
 1988 2 mos climbing & thermochronology sampling, Kulu area, NW Himalaya, India
 1988,89,91 4 mos Pd, Pt, Au exploration & NSF supported research, Skaergaard, Kap Edvard Holm and Lilloise intrusions, East Greenland
 1990 2 mos climbing & thermochronology sampling, Lahaul area, NW Himalaya, India
 1990-2008 lead PI, mapping & sampling, Josephine, Trinity and Ingalls peridotites, SW Oregon, N California, Washington, total of six months accumulated over 17 years
 1994 Shinkai 6500 submersible cruise, western ridge-transform intersection, Kane Fracture Zone, Mid-Atlantic Ridge
 1994-2001 lead PI, 2 to 5 wks/yr, every year, mapping and sampling, Samail ophiolite, Oman
 1995 4 wks mapping & sampling, Lilloise intrusion, Weidemann Fjord dikes, E Greenland
 1996 co-PI, SIGMA onshore-offshore seismic experiment, East Greenland, one month
 1998 Co-Chief Scientist, Shinkai 6500 submersible cruise, 14-16°N, Mid-Atlantic Ridge, site survey for future ODP drilling
 2000-2002 lead PI, Talkeetna Arc Continental Dynamics Project, three months mapping and sampling of Jurassic arc section, south central Alaska
 2000 5 wks mapping & sampling, flood basalts & xenoliths, Weidemann Fjord and Borgtinderne intrusion, East Greenland
 2003 Co-Chief Scientist, Ocean Drilling Program Leg 209, Sampling peridotite along the Mid-Atlantic Ridge, 14-16°N
 2004 co-PI, WAVE Expedition, dredging, Russian border to Unalaska Island, Aleutian arc, Alaska
 2007-16 lead PI, two to five wks per year, mapping and sampling, Samail ophiolite, Oman
 2015 lead PI, 1 mo field work, plutons and their metavolcanic host rocks, Aleutian arc
 2017 Oman Drilling Project, 2 months in the field supervising drilling operations
 2017 Oman Drilling Project, 1 month onboard DV Chikyu, supervising core description
 2018 Oman Drilling Project, 2 months in the field supervising drilling operations
 2018 DeBeers mines and Bushveld intrusion, carbon mineralization, 2 weeks
 2018 Oman Drilling Project, 1 month onboard DV Chikyu, supervising core description
 2018 Josephine peridotite, one week sampling for PT and thermodynamic study
 2019 Oman field trips for Columbia grad students and ICDP Scientific Advisory Group

Research and Education Grants

- 2020-2022 Sloan Foundation, “Carbon mineralization in peridotite for CO₂ removal from air and solid storage: Chemo-mechanical feedbacks and kinetics”, Christine McCarthy PI, Co-PI’s Peter Kelemen, Alissa Park, Marc Spiegelman, about \$1.5M
- 2015-2020 NSF-EAR-1520732: “A combined experimental and theoretical investigation of reactive flow in brittle media with applications to solid earth geodynamics”, Marc Spiegelman lead PI, P Kelemen and H Savage, co-PI’s, \$409,036
- 2015-2018 NSF-EAR-1516300: “Collaborative research: Alteration of mantle peridotite: Geochemical fluxes and dynamics of far from equilibrium transport”, P. Kelemen lead PI, \$2,972,214 in total (\$1,968,362 at LDEO, Columbia)
- 2015-2017 NSF EAR-1457293: "Collaborative Research: Focused Study of Aleutian Plutons and their Host Rocks: Understanding the building blocks of continental crust", P. Kelemen lead PI, \$200,000
- 2014-2018 International Continental Drilling Program, “Oman Drilling Project”, Kelemen lead PI, Jürg Matter and Damon Teagle, primary PI’s, 36 other co-PI’s, \$1.5M
- 2014-2016 NSF OCE-1358091/1356132, Marine Geology and Geophysics Program, “Advanced modeling for understanding fluid & magma migration in subduction zones”, Cian Wilson, lead PI, P Kelemen, M Spiegelman & Peter van Keken (Univ. Michigan) co-PI’s, \$228k
- 2013-2019 Alfred P. Sloan Foundation Grant 2014-3-01 to Columbia Univ., "Integrative Field Studies for the Deep Carbon Observatory", Kelemen PI, \$650,000
- 2012-14 NSF EAR-1147763: “Collaborative Research: Immersive Audio-visualization of Seismic Wave Fields in the Earth (EarthScope Education & Outreach)”, Ben Holtzmann, PI; P Kelemen, D Ebel (AMNH), J Tromp (Princeton) co-PI’s, \$94,708 at Columbia
- 2012-14 NSF OCE-1144759: “Collaborative Research: Plutons as ingredients for continental crust: Pilot study of the difference between intermediate plutons and lavas in the intra-oceanic Aleutian arc”, Kelemen, PI, Steve Goldstein, Sidney Hemming, M. Rioux(UCSB) co-PI’s, \$99,105 at Columbia
- 2012 NSF EAR-1238362: “Partial Support of 2012 Gordon Conference on Rock Deformation, Proctor Academy, Andover NH”, P Kelemen PI, \$22,505 to GRC
- 2012 DOE, BES Geoscience Program, Program Director Nick Woodward, Partial Support of 2012 Gordon Conference on Rock Deformation, \$10,000 to GRC
- 2012 Alfred P. Sloan Foundation, Columbia Univ. Grant #B2012-20, “Planning Workshop, Oman Drilling Project”, P. Kelemen PI, \$30,000
- 2012 International Continental Drilling Program (ICDP), support for “Workshop on Scientific Drilling in the Samail Ophiolite, Sultanate of Oman, Palisades NY, September 2012, P. Kelemen PI, \$50,000
- 2011-14 NASA 10-EXO10-0138 “Production of Organic Compounds During Serpentinization: Biotic or Abiotic?”, Kelemen is “Team Member”, lead PI: Everett Shock, Arizona State University, no direct support at Columbia University
- 2011-14 NASA 10-MFRP10-0098 “Aqueous Alteration of Ultramafic Rocks in Oman as an Analog for Understanding Martian Carbonates: a Remote, Field and Laboratory Investigation”, Kelemen is “Team Member”, lead PI: Bethany Ehlmann, Caltech, no direct support at Columbia University
- 2011-15 NSF EAR-1049905: “Petrologic Study of Peridotite Carbonation in Oman: Temperature, Timing and Fluid Composition”, P Kelemen PI, \$300,203
- 2010-13 NSF EAR-0961359: “Constraints on the Composition of the Subducting Oceanic Crust in the Northwest Pacific Ocean Basin”, S Straub, PI; P Kelemen, S Goldstein, co-PI’s, \$200,735
- 2008-12 NSF EAR-0742368: “Collaborative Research: Element recycling from UHP metasediments: Evidence and consequences”, P Kelemen, B Hacker (UCSB) PI’s, \$160,590 at Columbia.
- 2010-11 NSF OCE 1059175: “Partial support for US participation in a workshop geological carbon capture & storage in mafic and ultramafic rocks”, Kelemen PI, \$29,000
- 2010 NSF EAR-1053122: “2010 Rock Deformation Gordon Research Conference at Tilton School, New Hampshire”, P. Kelemen PI, \$25,000 to GRC

- 2010-13 DOE DE-FE0002386: Geo-chemo-mechanical studies for permanent CO₂ storage in geologic reservoirs, Kelemen PI, co-PI's J Matter (LDEO), A Park (Dept Earth & Environmental Engineering, Columbia), approximately \$300,000
- 2008-14 NSF EAR 0739010: "Collaborative Research: Microstructural and Modeling Constraints on Strain Localization, LPO Development and Rheology of the Upper Mantle", P Kelemen, M Spiegelman, G Hirth (Brown), \$241,347 at Columbia
- 2008-12 NSF EAR 0727013: "Collaborative Research: Genesis of Primitive, High-Sr Lavas in the Western Aleutians", P Kelemen, G Yogodzinski (U S Carolina), J Vervoort (Washington State) PI's, \$31,027 at Columbia
- 2006-08 Columbia Initiative in Science and Engineering Grant, Natural Carbon Sequestration in Ophiolite Peridotites – Rates and Mechanism of Serpentinization and Carbonation, P Kelemen, J Matter, PI's, \$200,000
- 2006-07 NSF EAR-0632774: "Support for the Penrose Conference on Arc Crustal Genesis and Evolution; July 9-15, 2006; Valdez, Alaska", P Kelemen, G Hacker (UCSB) PI's, \$15,000 to UCSB
- 2006-09 NSF EAR-0610138: "Geochemical Consequences of Melt Channelization: Exploring New Models for U-Series Variability", P Kelemen, M Spiegelman PI's, \$154,980
- 2004-05 NSF EAR-0409092, 0512369 "Collaborative Research: Volatiles in Aleutian-Alaska Arc Magmas", E Hauri (CIW DTM) P Kelemen, T Plank (Boston U) PI's, \$48,447 to WHOI and Columbia
- 2004-11 NSF OCE-0405572, 0520378, 0539118,: "Collaborative Research: Seismic of Magma Flux, Arc Composition, and Lower-Plate Serpentinization in the Central American Subduction Factory"; S. Holbrook, lead PI; co-PI's P. Kelemen, D. Lizarralde; approx. \$60,000 to WHOI and Columbia
- 2004-09 NSF OCE-0426160, 0520391: "Accomplishment Based Renewal: Comparing the Thermal Histories of Fast- and Slow-Spreading Oceanic Crust", P. Kelemen, \$162,820 to WHOI and Columbia
- 2004-07 NSF EAR-0337677: "Rhenium-Osmium Isotope and Platinum Group Element Systematics of Lower Oceanic Crust", P Kelemen, B Peucker-Ehrenbrink, \$299,725
- 2004-05 UAF 04-0117: University of Alaska subcontract to WHOI (now LDEO) as part of NOAA prime award to the University of Alaska: Primitive Plutonism in an Island Arc: A Study of Deep Submarine Canyons in the Western Aleutians, Kelemen PI, about \$10,000
- 2004-05 Texas A&M Task #F001831: Thermobarometry of Samples from ODP Leg 209; about \$30,000
- 2004-05 NSF OCE 0242233:, 0533226 "Collaborative Research: Primitive Magmatism and Crustal Genesis in an Island Arc", P Kelemen, G Yogodzinski (U S Carolina), \$101,536 to WHOI and Columbia
- 2003-05 NSF OCE-0327588: Localization of Melt Transport at Mid-Ocean Ridges, P Kelemen, L Montesi, \$147,738
- 2002-04 ODP grant for Kelemen's stipend & support as Co-Chief Scientist, ODP Leg 209
- 2002-03 Deep Ocean Exploration Institute (WHOI) grant: "Morphology of fluid flow channels in reactive porous media", Kelemen, Whitehead, Braun, Bradley
- 2002-04 NSF OCE-0137327, "Collaborative Research: Geochemical Consequences of Melt Channeling: Exploring a New Class of Models for Geochemical Variability", P Kelemen, M Spiegelman (Columbia), \$19,391 to WHOI
- 2002-04 NSF EAR-0125919, "Convection of the Mantle Wedge in Subduction Zones", P.Kelemen, G Hirth PI's, \$99,971
- 2001-04 NSF 0115433: "Support of a National Ion Microprobe Facility at Woods Hole Oceanographic Institution", N Shimizu, G Layne, P Kelemen PI's, \$268,682
- 2001-03 NSF OCE-0118572, "Detailed Study of Focused Melt Transport in the Upper Mantle Section of the Oman Ophiolite", P Kelemen, G Hirth PI's, \$134,265
- 2001-03 NSF EAR-0087706, "Tectonic Consequences of Lower Crustal Convective Instability", M Jull, P Kelemen PI's, \$58,055
- 2000-06 NSF EAR-9910899: Continental Dynamics Program, "Constraints on the Genesis of Continental Crust via Arc Magmatism: Geology, Geochemistry, Structure and Physical Properties of the Talkeetna Arc Crustal Section, South Central Alaska", P Kelemen, PI; S DeBari (WWU), N

- Christensen (U Wisconsin), T Pavlis (U New Orleans), R. Coleman (Stanford), S Hart, G Hirth, B Hacker (UCSB), J Mattinson (UCSB), co-PI's, \$1,840,627
- 2001-04 NSF 9904400: "Support of a National Ion Microprobe Facility at Woods Hole Oceanographic Institution", N Shimizu, G Layne, P Kelemen PI's, \$184,259
- 1999-03 NSF OCE-9819666: "Melt extraction and crustal accretion at mid-ocean ridges: Continued study of the mantle and lower crust in the Oman ophiolite", P Kelemen PI, \$115,341
- 1999-01 Mellon Independent Study Award (WHOI), "Thermodynamics of Fluid Flow in the Earth ", Peter Kelemen
- 1999-00 NSF EAR-9814632: "The genesis of ultra-depleted mantle peridotites in continental upper mantle", P Kelemen PI, \$180,000
- 1998-00 NSF OCE-9731136: "ODP Site Survey via Shinkai 6500 submersible and geophysical observations: JAMSTEC/WHOI expedition to the Mid-Atlantic Ridge from 14° to 16°N, P Kelemen PI, \$125,000
- 1997-99 NSF OCE-9711170: "Constraints on the accretion of lower oceanic crust: A quantitative textural and geochemical study of gabbros from the Oman ophiolite and mid-ocean ridges", P Kelemen, G Hirth, \$140,814
- 1996-00 NSF EAR-9628749: "Support of a National Ion Microprobe Facility at Woods Hole Oceanographic Institution", N Shimizu, G Layne, P Kelemen PI's, \$174,742
- 1996-99 NSF OCE-9530307, "Causes and consequences of flow organization during melt transport", PI: Marc Spiegelman; WHOI subcontract PI: Peter Kelemen.
- 1996-98 NSF EAR-9419240, "Regional variability in primitive Aleutian magmas and implications for processes in the mantle wedge: ... an ion microprobe and isotopic study", P Kelemen, G Yogodzinski (U S Carolina) PI's, \$75,000 to WHOI
- 1996-98 NSF OCE-9416631, "Deep Structure of a Hotspot Influenced Rifted Volcanic Margin: A Joint U.S.- Danish Seismic Experiment off SE Greenland", S Holbrook, R Detrick, P Kelemen G Kent PI's, \$386,393
- 1996-97 Mellon Independent Study Award (WHOI), "Development of low-altitude, aerial photo mosaic technique and measurement of size-frequency distribution of melt flow channels in the upper mantle", Peter Kelemen & Greg Hirth
- 1995-99 NSF OCE-9416616, "Melt extraction and crustal accretion at mid-ocean ridges: Collaborative study of the mantle and lower crust in the Oman ophiolite", P Kelemen, N Shimizu, \$124,999
- 1995-98 NSF EAR-9418228: "Mapping of Textural, Modal and Compositional Variations in the Shallow Mantle: Implications for the Dynamics of Melt Flow and Segregation", P Kelemen PI, \$156,200
- 1994-97 NSF OCE-9314013 "Fluid flow in partially soluble porous media: Experimental and theoretical study of melt extraction from the mantle beneath mid-ocean ridges", P Kelemen, J Whitehead, \$90,000
- 1994 NSF INT-9313822, "US-France Cooperative Research: Integrated studies of oceanic spreading centers of the Oman ophiolite", N Shimizu, P Kelemen PI's, \$18,000
- 1993-96 NSF OCE-9305508: "Support of a regional ion-microprobe facility at Woods Hole Oceanographic Institution", N Shimizu, P Kelemen
- 1992-93 Mellon Independent Study Award (WHOI), "Evolution of volcanic rifted continental margins"; W. Steven Holbrook & Peter Kelemen
- 1993-95 NSF OCE-9217556 "A Study of a Mid-Atlantic Ridge Harzburgite-Dunite Complex at 15 Degrees 15' North", H Dick, P Kelemen PI's, \$200,000
- 1991-93 NSF EAR-9018482, "Parental Magmas and Magmatic Fluids of the Lilloise Intrusion, East Greenland, and their Possible Relation to the Iceland Hotspot", P Kelemen, M Kurz PI's, \$100,000
- 1990-92 Mellon Independent Study Award (WHOI), "Experimental investigation of the effects of H₂O on phase equilibria and trace element partitioning in the upper mantle", Peter Kelemen
- 1990-93 NSF EAR-9005306, "Field and Laboratory Study of Discordant Dunite in Alpine Peridotite: Melt-Rock Interaction During Magma Transport in the Shallow Mantle", P Kelemen, H Dick PI's, \$165,000

- 1986-88 Wrote proposal for NSF EAR-8600534, "Assimilation of ultramafic rock in fractionating magma", Mark Ghiorsio & Bernard Evans, NSF Petrology & Geochemistry
- 1986-87 Achievement Rewards for College Scientists, dissertation support grant.
- 1985-86 David A. Johnston Memorial Fellowship, Dept. of Geological Sciences, University of Washington.
- 1983-84 Chevron Scholarship.
- 1983 GSA Penrose Grant for geologic field work: Outstanding Mention.
- 1983 Sigma-Xi Grant-in-Aid for geologic field work.
- 1982-85 University of Washington Department of Geological Sciences Corporation Fund Grants, '82, '83, '85.
- 1980-81 Reynolds Fellowship for Foreign Study, Dartmouth College, shared with Mark Sonnenfeld (Dartmouth '80): geologic mapping, NW Himalaya, India
- 1977 Explorer's Club of North America Grant: Oxygen isotope fractionation as a function of altitude, Cordillera Blanca, Peru.

Patents

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Editorial

- 2014-present Associate Editor, Proceedings of the National Academy of Sciences
- 2009-10 Editor, Special Lherzolite Volume of Journal of Petrology
- 2001 Editor, Current Research on the Oman Ophiolite, special collection G-cubed
- 2000-04 Associate Editor, G-cubed
- 1999-2000 Editor, Special Lherzolite Volume of Journal of Petrology
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Kelemen, P.B. and H.J.B. Dick, Focused melt flow and localized deformation in the upper mantle: Juxtaposition of replacive dunite and ductile shear zones in the Josephine peridotite, SW Oregon. *J. Geophys. Res.* 100, 423-438, 1995 (214).

Kobayashi, K, H Fujimoto, W Bryan, M Tivey, **P Kelemen**, T Matsumoto, H Kinoshita, A Takeuchi, H Ishizuka, T Furuta, T Fujiwara, Ocean Floor Slumpings under Active Transform Tectonism Observed by the Mid-Atlantic Ridge—Kane Transform Fault Survey of R/S" Shinkai 6500, *JAMSTEC J. Deep Sea Res* 11, 63-70, 1995.

Matsumoto, T, H Fujimoto, Jian Lin, W Bryan, M Tivey, **P Kelemen**, H Ishizuka, H Kinoshita, A Takeuchi, K Kobayashi, T Fujiwara, T Furuta, Density structure of basement rocks and its tectonic implications in the Kane Fracture Zone Area, Mid-Atlantic Ridge: Preliminary results, *JAMSTEC J. Deep Sea Res* 11, 27-25, 1995.

Takeuchi, A, H Fujimoto, W Bryan, M Tivey, H Ishizuka, **P Kelemen**, H Kinoshita, T Matsumoto, K Kobayashi, T Furuta, T Fujiwara, Active tectonics at the Mid-Atlantic Ridge/Kane Transform intersection, *JAMSTEC J. Deep Sea Res* 11, 53-62, 1995.

1994

Whitehead, J.A. and **P.B. Kelemen**, Fluid and thermal dissolution instabilities in magmatic systems. in: *Magmatic Systems*, MP Ryan ed., Academic Press, San Diego CA, 355-379, 1994 (8).

1993

Holbrook, W.S. and **P.B. Kelemen**, Large igneous province on the US Atlantic margin and implications for magmatism during continental breakup. *Nature* 364, 433-436, 1993 (240).

Kelemen, P.B., N. Shimizu, and J.T. Dunn, Relative depletion of niobium in some arc magmas and the continental crust: Partitioning of K, Nb, La and Ce during melt/rock reaction in the upper mantle. *Earth Planet. Sci. Lett.*, 120, 111-133, 1993 (484).

1992

Kelemen, P.B., H.J.B. Dick, and J.E. Quick, Formation of harzburgite by pervasive melt-rock reaction in the upper mantle. *Nature* 358, 635-641, 1992 (667).

1990

Kelemen, P.B., Reaction between ultramafic wall rock and fractionating basaltic magma: Part I, Phase relations, the origin of calc-alkaline magma series, and the formation of discordant dunite. *J. Petrol.* 31, 51-98, 1990 (533).

Kelemen, P.B., K.T.M. Johnson, R.J. Kinzler, and A.J. Irving, High field strength element depletions in arc basalts due to mantle-magma interaction. *Nature* 345, 521-524, 1990 (394).

Kelemen, P.B., D.B. Joyce, J.D. Webster, and J.R. Holloway, Reaction between ultramafic wall rock and fractionating basaltic magma: Part II, Experimental investigation of reaction between olivine tholeiite and harzburgite at 1150 and 1050°C and 5 kbar. *J. Petrol.* 31, 99-134, 1990 (176).

1989

Cerveny, P.F., C.W. Naeser, **P.B. Kelemen**, J.E. Lieberman, and P.K. Zeitler, Zircon fission track ages from the Gasherbrum diorite on Gasherbrum IV, Karakorum Range, northern Pakistan. *Geology* 17, 1044-1048, 1989 (30).

1987

Ghiorso, M.S. and **P.B. Kelemen**, Evaluating reaction stoichiometry in magmatic systems evolving under generalized thermodynamic constraints: Examples comparing isothermal and isenthalpic assimilation. *Mysen*,

BO, ed, Magmatic Processes: Physicochemical Principles, Geochemical Society Special Publication No. 1, (Yoder Volume), 319-336, 1987 (47).

Kelemen, P.B., I. Reuber, and G. Fuchs, Structural evolution and sequence of thrusting in the High Himalayan, Tibetan-Tethys and Indus suture zones of Zaskar and Ladakh, Western Himalaya: Discussion. *J. Struct. Geol.* 10, 129-132, 1987 (32).

1986

Kelemen, P.B., Assimilation of ultramafic rock in subduction-related magmatic arcs. *J. Geol.* 94, 829-843, 1986 (133).

Kelemen, P.B. and M.S. Ghiorso, Assimilation of peridotite in zoned calc-alkaline plutonic complexes: Evidence from the Big Jim complex, Washington Cascades. *Contrib. Mineral. Petrol.* 94, 12-28, 1986 (82).

1983

Kelemen, P.B. and M.D. Sonnenfeld, Stratigraphy, structure, petrology and local tectonics, central Ladakh, NW Himalaya. *Schweiz. Mineral. Petrog. Mitt.* 63, 267-287, 1983 (32).

INVITED TALKS SINCE 2006

2006

Penrose Conference on Arc Crustal Genesis and Evolution, July 2006, keynote
Mission Moho Workshop, Portland OR, 2006, keynote
2006 GSA Annual Meeting, keynote
2006 Fall AGU, invited talk

2007

2007 State of the Arc Meeting, Osorno, Chile, keynote
Brown University, March 2007
Hallimond Lecturer, Mineralogical Society, Cambridge UK, summer 2007
colloquium + informal talk, University of Washington, September 2007
CNRS "Forsterite: Différentes approches d'étude de la distribution des magmas dans la Terre", Toulouse, France, October 2007, 4 hour lecture series
colloquium + informal talk, University of Oregon, November 2007
2007 MARGINS Izu-Bonin-Marianas Subduction Factory Workshop, keynote
2007 Fall AGU, invited talk

2008

colloquium + informal talk, University of Colorado, January 2008 (MARGINS Distinguished Lecturer)
colloquium + informal talk, Central Michigan State University, April 2008 (MARGINS Distinguished Lecturer)
colloquium + informal talk, SUNY Oswego, April 2008 (MARGINS Distinguished Lecturer)
colloquium + informal talk, Skidmore College, April 2008 (MARGINS Distinguished Lecturer)
Keynote lecture, Gordon Conference on Rock Deformation, August 2008
2008 GSA Annual Meeting, Session in Honor of Bernard Evans Roebling Medal, October 2008
Keynote lecture, Gordon Conference on Rock Deformation, August 2008
Keynote lecture, 2008 GSA Annual Meeting, Session in Honor of Bernard Evans Roebling Medal, October 2008
Keynote lecture, 2nd International Conference on Accelerated Carbonation for Environmental and Materials Engineering, Rome, October 2008
colloquium + two informal talks, ETH-Zurich, November 2008
invited talk on continental crust, AGU Fall Meeting, December 2008

2009

invited speaker, British Petroleum Symposium on CO₂ Capture from Air, New York, February 2009
colloquium + informal talk, Stanford University, February 2009
colloquium + informal talk, Princeton University, March 2009

Noye Johnson Memorial Lecture + informal talk, Dartmouth College, March 2009
 Geodynamics Seminar keynote talk, Woods Hole Oceanographic Institution, March 2009
 one week lecture series (4 lectures) on igneous petrology, Harvard University, May 2009
 colloquium, MIT, May 2009
 Science Awards Ceremony, keynote lecture, Riverdale Country School, May 2009
 Keynote lecture, InterRidge Workshop on Melting, Magma, Fluids and Life: Workshop for Scientific Ocean Drilling, July 2009
 two invited lectures, University of Lausanne, August 2009
 Keynote lecture, INVEST (IODP New Ventures in Exploring Scientific Targets) Meeting (Decadal IODP Science Planning), Bremen, September 2009
 invited talk, Harvard, November 2009
 invited talk, Lawrence Berkeley National Lab, December 2009

2010

CIRES Distinguished Lecture Series, University of Colorado, March 2010
 invited talk, Yale University, March 2010
 invited talk, Brown University, April 2010
 Keynote Lecture, AGU Chapman Conference on Detachments in Oceanic Lithosphere: Deformation, Magmatism, Fluid Flow, and Ecosystems, Cyprus, May 2010
 Keynote Lecture, AGU Chapman Conference on Detachments in Oceanic Lithosphere: Deformation, Magmatism, Fluid Flow, and Ecosystems, Cyprus, May 2010
 Keynote lecture, Workshop on Reaching the Mantle Frontier: Moho and Beyond, Deep Carbon Observatory and IODP, September 2010
 invited talk, Seismology Lab, Caltech, October 2010
 invited colloquium talk, Division of Geological & Planetary Sciences, Caltech, October 2010
 invited colloquium talk, McGill University, November 2010
 invited talk, Global Climate and Energy Project, Stanford University, December 2010

2011

invited talk, Workshop on Supercritical Carbon Dioxide and Material Interactions, Brookhaven National Lab, March 2011
 keynote: IODP/ICDP Workshop on Mineral Carbonation for CO₂ Storage, Oman, Jan 2011
 Distinguished Lecturer, University of Wyoming, March 2011, mineral carbonation
 invited, University of Colorado, March 2011, continental genesis & evolution
 invited, Kongsberg Seminar, Kongsberg, Norway, May 2011, mineral carbonation
 invited, Oxford University, May 2011, mineral carbonation
 2 invited, Cambridge University, May 2011, mineral carbonation, cratonic upper mantle
 2 invited, Bristol University, May 2011, mineral carbonation, arc magmatism
 2 invited, GFZ-Potsdam, May 2011, mineral carbonation, viscous mantle earthquakes
 invited, NY Assoc Energy Economics, June 2011, rare earth elements
 2 keynotes, Goldschmidt Conf, Aug 2011, continental genesis & evolution, mantle melt extraction
 keynote: EarthScope Workshop on the Lithosphere/Asthenosphere Boundary, Sept 2011, seismic boundaries within continental upper mantle
 keynote: GeoPRISMS Alaska Workshop, Sept 2011, Aleutian magmatism & continental genesis
 keynote: Continental Crust Symposium, Cornell, Sept 2011, continental genesis & evolution
 2 invited: University of Minnesota, Sept 2011, mineral carbonation, continental genesis & evolution

2012

invited, Fall 2012 AGU Meeting, mineral carbonation
 keynote, Int'l Conf on Geology Arabian Plate & Oman Mtns, Oman, Jan 2012, mineral carbonation
 invited, University of Alaska, Fairbanks, February 2012, arc magmatism
 Chapman Lecture, University of Alaska, Fairbanks, February 2012, continental genesis & evolution
 2 invited, Rensselaer Polytechnic Institute, Mar 2012, mineral carbonation, energy resources
 keynote, Kongsberg Seminar, May 2012, morphology of reactive melt transport networks
 invited, Goldschmidt Conference, June 2012, continental genesis & evolution
 keynote, Kongsberg Seminar, May 2012, morphology of reactive melt transport networks
 keynote, Gordon Conference on Rock Deformation, August 2012

keynote, etc, Workshop on Scientific Drilling in the Samail Ophiolite, Sultanate of Oman (aka Oman Drilling Workshop), September 2012

2013

Distinguished Lecturer, University of Wyoming, February 2013, continental genesis
 invited, Stanford University, May 2013
 2 keynotes, Japan Geological Union, May 2013
 invited, 5th Biot Conference on Poromechanics, July 2013
 2 keynotes, Goldschmidt Conference, August 2013, reactive cracking, continental genesis
 Stanford University, May 2013, continental genesis
 2 keynotes, Japan Geological Union, May 2013, mantle melting, continental genesis
 invited lecture, University of Kyoto, continental genesis
 invited, 5th Biot Conference on Poromechanics, July 2013, reaction-driven cracking
 2 keynotes, Goldschmidt Conference, August 2013, reactive cracking, continental genesis
 Plenary Lecture, Swiss Geoscience Conference, Lausanne, November 2013, mineral carbonation
 UCLA, November 2013, 2 talks: mineral carbonation, continental genesis

2014 (Department Chair, declining invitations)

University of Chicago, March 2014, mineral carbonation & reaction-driven cracking, subduction zone carbon cycle
 Research Coordination Network on Carbon Capture, Utilization & Storage, Annual Meeting, 2014
 Harvard University, April 2014, reamination transforms arc to continental crust
 Harvard University, October 2014, mineral carbonation & reaction-driven cracking
 Pennsylvania State University, November 2014, mineral carbonation & reaction-driven cracking

2015 (Department Chair, declining invitations)

Princeton University, February 2015, mineral carbonation & reaction-driven cracking
 Deep Carbon Observatory, 2nd International Science Meeting, München, March 2015, keynote, subduction carbon cycle
 State-of-the-Arc, Montserrat, April 2015, keynote, Aleutian magmatism + continental genesis + subduction carbon cycle
 Yale University Energy Sciences Institute/Geology & Geophysics Symposium, May 2015, keynote
 Marie-Curie Initial Training Network ABYSS Mid-term meeting n°1, Hannover GE, May 2015, keynote, mineral carbonation, reaction driven cracking, subduction carbon cycle
 DOE Basic Energy Sciences, Roundtable on Foundational Research Relevant to SubTER (Subsurface Technology and Engineering Research, Development, and Demonstration Crosscutting Initiative), short presentation, lead group author permeability management via reactive fluid flow, May 2015
 5th International Conference on Accelerated Carbonation for Environmental and Material Engineering, June 2015, Keynote, mineral carbonation & reaction driven cracking
 Deep Carbon Observatory Thematic Institute: Carbon from the Mantle to the Surface, Berkeley, June 2015, keynote, subduction carbon cycle
 CUNY, CCNY campus, colloquium, mineral carbonation & reaction-driven cracking, September 2015
 GeoPRISMS Theoretical Institute, Aleutian magmatism with implications for formation and evolution of continental crust in subduction-related volcanic arcs, Redondo Beach, October 2015
 MIT Dept. of Earth, Atmospheric and Planetary Sciences, colloquium, mineral carbonation & reaction-driven cracking, November 2015

2016 (Department Chair, declining invitations)

CUNY Graduate School, emulating natural systems to achieve low cost CO₂ removal from air, March 2016
 Cambridge University, Newton Symposium, reactive melt transport in the upper mantle, April 2016
 Cambridge University, Relamination in the origin and evolution of continental lower crust, April 2016
 Invited Plenary Lecture, European Geosciences Union General Assembly, Revisiting the subduction zone carbon cycle: What goes down, mostly comes up, April 2016

Plate Tectonics at Lamont Doherty Earth Observatory, keynote: Reactive melt transport in the upper mantle at tectonic plate boundaries and the origin of oceanic versus continental crust, May 2016

University of Pennsylvania, mineral carbonation, reaction driven cracking, subduction carbon cycle, October 2016

Workshop on Mineral Carbonation for CO₂ Capture and Storage, San Francisco, convenor, keynote, CO₂ capture and storage via enhanced weathering of peridotite, December 2016

2017 (Department Chair, declining invitations)

Symposium on the Oman Drilling Project, Sultan Qaboos University, Oman, February 2017, Introduction to the Oman Drilling Project

University of Texas, Austin, mineral carbonation, reaction driven cracking, subduction carbon cycle, April 2017

University of Texas, Austin, Relamination in the origin and evolution of continental lower crust, April 2017

CO₂ Summit III: Pathways to Carbon Capture, Utilization, and Storage Deployment, Calabria, Italy, CO₂ capture and storage via enhanced weathering of peridotite, May 2017

2018

Public Authority for Mining, Muscat, Oman: Initial Results of the Oman Drilling Project, March 2018

University of Delaware: Revisiting the subduction zone carbon cycle, April 2018

Japanese Geoscience Union, Chiba, Japan, keynote talk in drilling session: Peridotite carbonation at the leading edge of the mantle wedge: OmDP Site BT1, May 2018

2nd DeBeers Mineral Carbonation Workshop, Johannesburg SA: *in situ* carbon mineralization in peridotite: natural processes & proposed engineered systems, July 2018

International Carbon Conference (ICC-2018), Reykjavik, Iceland: *in situ* carbon mineralization in peridotite: natural processes & proposed engineered systems, September 2018

Deep Carbon Observatory, Zürich: Initial Results of the Oman Drilling Project, October 2018

2019

European Geoscience Union, Vienna: Peridotite alteration in OmanDP cores, April 2019

Boston College: *in situ* carbon mineralization in peridotite: natural processes & proposed engineered systems, April 2019

MIT: "Viscous earthquakes in peridotite and ice", April 2019

Japanese Geoscience Union, Chiba, Japan, Plenary Lecture, Solid Earth Sciences: Peridotite carbonation and the global carbon cycle, May 2019

2019 Njord Seminar, Hølsnoy, Norway, June 2019: "Revisiting a viscous earthquake model"

2019 Njord Seminar, Hølsnoy, Norway, June 2019: "Thinking about the Moho beneath southern Tibet"

LDEO Aleutians Workshop, August 5-6, 2019: Role of arc magmatism in the genesis and evolution of continental crust

Yale School of Forestry, October 4 2019: "Carbon mineralization for CO₂ removal from air"

Deep Carbon Observatory, October 24-26 2019: "Initial results of the Oman Drilling Project"

Carbon Management Workshop, Stanford University, November 8 2019: "Carbon mineralization for CO₂ removal from air at the gigaton scale"

International Conference on Ophiolites and Oceanic Lithosphere at Sultan Qaboos University, Oman, January 2020: One keynote and one additional talk

University of Colorado, February-March 2020:

Genesis and evolution of continental lower crust (3 lectures)

Subduction zone carbon budget,

Low temperature ductile deformation in subduction zones at the leading edge of the mantle wedge,

Carbon mineralization for CO₂ removal from air and permanent solid storage
Initial results of the Oman Drilling Project: Focus on alteration & weathering

ABSTRACTS SINCE 2006

2006

- Austin, N. and **P. Kelemen**, Extensive partial melting and melt extraction in pelitic metasediments: An example from the Chiwaukum schist (Washington Cascades), AGU Fall Meeting abstract V12B-02, 2006
- Behn, M.D., G. Hirth and **P.B. Kelemen**, Lower crustal foundering as a mechanism for 3-D flow in the mantle wedge and trench-parallel seismic anisotropy, GSA Penrose Meeting on Arc Crustal Genesis and Evolution, July 2006
- Bernstein, S., **P.B. Kelemen** and K. Hanghøj, Constant average olivine Mg# in cratonic mantle reflects Archaean mantle melting to the exhaustion of orthopyroxene, AGU Fall Meeting abstract V11D-0611, 2006
- Collier, M.L. and **P.B. Kelemen**, Reactive Crystal Fractionation and MORB Chemical Variability: Observations, Theory, Models, Implications, AGU Fall Meeting abstract V23E-0693, 2006
- Draut, A.E., P.D. Clift and **P.B. Kelemen**, Stratigraphic facies development in a Lower Jurassic forearc basin, Talkeetna Mountains, Alaska, GSA Penrose Meeting on Arc Crustal Genesis and Evolution, July 2006
- Greene, A., S. DeBari, **P.B. Kelemen**, J. Blusztajn and P.D. Clift, Linking the Plutonic and Volcanic Complements of the Talkeetna Arc, GSA Penrose Meeting on Arc Crustal Genesis and Evolution, July 2006
- Hacker, B.R., L. Mehl, **P.B. Kelemen**, M. Rioux and M.D. Behn, Reconstruction of the Talkeetna Intra-Oceanic Arc of Alaska Through Thermobarometry, GSA Penrose Meeting on Arc Crustal Genesis and Evolution, July 2006
- Hersum, T., M. Spiegelman and **P. Kelemen**, Consequences of differential trace element adsorption at melt-solid interfaces on generating U-series excesses during porous melt flow, AGU Fall Meeting abstract V11A-0561, 2006
- Katz, R.F., M. Spiegelman, C.E. Manning and **P.B. Kelemen**, Hydrous reactive flow and channelized melt transport in subduction zones, GSA Penrose Meeting on Arc Crustal Genesis and Evolution, July 2006
- Kelemen, P.**, Constraints From the Rock Record, and Complementary Speculation, on Subduction and the Evolution of the Mantle, AGU Fall Meeting abstract U14B-01 INVITED, 2006.
- Kelemen, P.**, What I Learned From Henry Dick: Highlights and What's Left for Us? AGU Fall Meeting abstract V12C-08, 2006
- Kelemen, P.B.**, B.R. Hacker, A. Greene, M. Rioux, M. Johnsen, L. Mehl, S. DeBari, K. Hanghøj, P. Clift and M. Behn, New estimates for the bulk composition of the Jurassic Talkeetna arc, GSA Annual Meeting, Paper No. 81-6 INVITED, 2006
- Kelemen, P.B.**, B.R. Hacker, M. Rioux, A. Greene, L. Mehl, M. Johnsen, S. DeBari, K. Hanghøj, P.D. Clift and M.D. Behn, A New Mass Balance for the Talkeetna Arc Crustal Composition: Comparison with the Izu–Bonin and Aleutian Arcs, and Constraints on Continental Genesis, GSA Penrose Meeting on Arc Crustal Genesis and Evolution, July 2006
- Mehl, L., B.R. Hacker, G. Hirth and **P.B. Kelemen**, The Talkeetna Sub-Arc Mantle; Implications for Modern Arcs, GSA Penrose Meeting on Arc Crustal Genesis and Evolution, July 2006
- Rioux, M., J.M. Mattinson, B.R. Hacker, **P.B. Kelemen**, J. Blusztajn and J.M. Amato, Tectonic Development of the Talkeetna Arc, GSA Penrose Meeting on Arc Crustal Genesis and Evolution, July 2006
- Shillington, D.J., H.J.A. Van Avendonk, W.S. Holbrook, **P.B. Kelemen** and M.J. Hornbach, High seismic velocities in the lower crust of the central Aleutian Island Arc: composition and implications, GSA Penrose Meeting on Arc Crustal Genesis and Evolution, July 2006

2007 (something a little wrong here; data lost or some things listed as 2008 are actually 2007)

- Kelemen, P.B.**, J. Amato, M. Behn, J. Blusztajn, N. Christensen, P. Clift., S. DeBari, A. Draut, A. Greene, B. Hacker, K. Hanghøj, S. Hart, G. Hirth, M. Johnsen, J. Mattinson, L. Mehl, T., Pavlis, M. Rioux and J. Trop, Arc Crust: Results and Questions from the Talkeetna Arc Continental Dynamics Project, State of the Arc (SOTA) Meeting, Osorno, Chile, KEYNOTE, January 2007.

2008

- Behn, M.D., G. Hirth and **P.B. Kelemen**, Mechanisms for 3-D Flow in the Mantle Wedge at Subduction Zones, *Eos Trans. AGU*, 88(52), Fall Meet. Suppl., U14A-01, 2008.
- Brown, S.T., Yogodzinski, G.M., Vervoort, J.D., and **Kelemen, P.B.**, 2008, Source Components and Mass Transfer in the Aleutian Arc from Hf, Nd and Pb Isotopes: *Eos Trans. AGU*, 89(53), Fall Meet. Suppl. Abstract, p. V33C-2227.
- Cagnioncle, A., E. Parmentier, A. Saal and **P. Kelemen**, Simple Models of Melting and Trace Element Transport in Subduction Zones, *Eos Trans. AGU*, 88(52), Fall Meet. Suppl., V33F-04, 2008.
- DeBari, S., Greene, A., **Kelemen, P.B.**, and Johnsen, M., 2008, Vertical Stratification of Composition, Density, and Inferred Vertical Stratification of Composition, Density, and Inferred Magmatic Processes in Exposed Arc Crustal Sections *Eos Trans. AGU*, 89(53), Fall Meet. Suppl. Abstract, vol. 89(53), (2008), p. ., "V33A-2195 INVITED
- Elkins, L.J., K.W. Sims, J. Prytulak, N. Mattielli, T. Elliott, J. Blichert-Toft, **P. Kelemen**, D. Mertz and C. Devey, Constraints on Melting Beneath the Slow-Spreading Kolbeinsey Ridge from 238U, 230Th, and 231Pa Excesses, *Eos Trans. AGU*, 88(52), Fall Meet. Suppl., V21B-0607, 2008.
- Hacker, B.R., **P.B. Kelemen** and M.D. Behn, Continental Relamination Drives Compositional and Physical-Property Changes in the Lower Crust, *Eos Trans. AGU*, 88(52), Fall Meet. Suppl., V32A-06, 2008.
- Hirth, G., **P. Kelemen**, J. Warren, P. Skemer and J. Homburg, 2008, The rheology of mantle shear zones, Chapman Conference on Shallow Mantle Processes AKA Fifth International Orogenic Lherzolite Conference, Mt. Shasta California, September 2008.
- Homburg, J.M., G. Hirth and **P.B. Kelemen**, Viscosity Contrast between Gabbro and Peridotite: A Case Study From the Oman Ophiolite, *Eos Trans. AGU*, 88(52), Fall Meet. Suppl., T41B-0574, 2008.
- Homburg, J.M., Hirth, G., and **Kelemen, P.B.**, 2008, The Jelly Sandwich Bites Back: A Case Study of the Viscosity Contrast Between the Lower Crust and Upper Mantle From the Oman Ophiolite: *Eos Trans. AGU*, 89(53), Fall Meet. Suppl. Abstract, p. T53C-1962.
- Kelemen, P.**, B. Hacker and N. Austin, How does recycling of sediment components in arc magmatism really work?, *Eos Trans. AGU*, 88(52), Fall Meet. Suppl., V51G-04 2008.
- Kelemen, P.**, G. Hirth, J. Homburg, J. Warren and M. Spiegelman, A periodic shear-heating mechanism for intermediate depth earthquakes in the mantle, *Eos Trans. AGU*, 88(52), Fall Meet. Suppl., D151A-0283, 2008.
- Kelemen, P.B.** and G. Hirth, 2008, A periodic shear-heating mechanism for intermediate-depth earthquakes in the mantle, Chapman Conference on Shallow Mantle Processes AKA Fifth International Orogenic Lherzolite Conference, Mt. Shasta California, September 2008.
- Kelemen, P.B.**, 2008, Aleutian primitive andesites: From the mantle, but how?: *Geochim. Cosmochim. Acta*, v. 72, Suppl. 1, p. A458-A458.
- Kelemen, P.B.**, 2008, In situ carbonation of peridotite for CO₂ capture and storage, Chapman Conference on Shallow Mantle Processes AKA Fifth International Orogenic Lherzolite Conference, Mt. Shasta California, September 2008.
- Kelemen, P.B.**, and J. Matter, 2008, Some Thoughts on the Kinetics of Peridotite Carbonation: Geological Society of America Annual Meeting Abstract 292-9.
- Kelemen, P.B.**, Hacker, B., Behn, M., and DeBari, S., 2008, Distillation of continental crust from above and below: *Eos Trans. AGU*, 89(53), Fall Meet. Suppl. Abstract, p. V22A-01 INVITED.
- Kelemen, P.B.**, M. Godard, S. Hart, M. Jackson and K. Hanghøj, 2008, High Pb/Ce reservoir in depleted, altered mantle peridotites, Chapman Conference on Shallow Mantle Processes AKA Fifth International Orogenic Lherzolite Conference, Mt. Shasta California, September 2008.
- Kelemen, P.B.**, Matter, J., Streit, L., Rudge, J., and Spiegelman, M., 2008, Potential for in situ carbonation of peridotite for geological CO₂ storage: *Eos Trans. AGU*, 89(53), Fall Meet. Suppl. Abstract, p. H11J-06.
- Kelemen, P.B.**, B.R. Hacker, A. Greene, M. Rioux, M. Johnsen, L. Mehl, S. DeBari, K. Hanghøj, P. Clift and M. Behn, New Estimates for the Bulk Composition of the Jurassic Talkeetna Arc, MARGINS Workshop on Subduction Factory Studies in the Izu-Bonin-Mariana Arc System: Results and Future Plans, Honolulu, Hawaii, November 2008.
- Liang, Y., **P. Kelemen** and Z. Morgan, 2008, Mineral Compositional Variations in Dunite Bodies from the Trinity and Josephine Ophiolites, Chapman Conference on Shallow Mantle Processes AKA Fifth International Orogenic Lherzolite Conference, Mt. Shasta California, September 2008.
- Liang, Y., Z. Morgan, J. Kass, M. Braun and **P. Kelemen**, 2008, Grain Growth and Grain Size Reduction during Melt-rock Reaction in the Mantle, Chapman Conference on Shallow Mantle Processes AKA Fifth International Orogenic Lherzolite Conference, Mt. Shasta California, September 2008.

- Matter, J.M. and **P.B. Kelemen**, Enhanced Natural Carbon Sequestration in Tectonically Exposed Mantle Peridotites, *Eos Trans. AGU*, 88(52), Fall Meet. Suppl., U43C-1380, 2008.
- Peucker-Ehrenbrink, B., Hanghoj, K., and **Kelemen, P.B.**, 2008, Rhenium-Osmium and Platinum Group Elements in oceanic crust - Oman and DSDP/ODP 504B: *Geochim. Cosmochim. Acta*, v. 72, Suppl. 1, p. A742-A742.
- Rioux, M., Bowring, S.A., and **Kelemen, P.B.**, 2008, Timescales of Crustal Accretion at a Medium to Fast Spreading Ridge: High Precision U- Pb Zircon Dating of the Intrusive Crust of the Cretaceous Oman Ophiolite: *Eos Trans. AGU*, 89(53), Fall Meet. Suppl. Abstract, p. V44B-02.
- Shillington, D.J., VanAvendonk, H.J., Behn, M.D., and **Kelemen, P.B.**, 2008, What can seismic velocity structure tell us about the composition of island arc lower crust? An example from the central Aleutians: *Eos Trans. AGU*, 89(53), Fall Meet. Suppl. Abstract, p. V22A-07 INVITED.
- Skemer, P., Warren, J., **Kelemen, P.**, and Hirth, G., 2008, Microstructural and rheological evolution in naturally deformed peridotite mylonites, Chapman Conference on Shallow Mantle Processes AKA Fifth International Orogenic Lherzolite Conference, Mt. Shasta California, September 2008
- Skemer, P., Warren, J., **Kelemen, P.**, and Hirth, G., 2008, Microstructural and rheological evolution in naturally deformed peridotite mylonites: *Eos Trans. AGU*, 89(53), Fall Meet. Suppl. Abstract, p. U43B-0064.
- Spiegelman, M., R.F. Katz, **P.B. Kelemen**, Y. Fang, M. Collier and B. Holtzman, Putting the Dynamics in Chemical Geodynamics, *Eos Trans. AGU*, 88(52), Fall Meet. Suppl., U21B-0423, 2008.
- VanTongeren, J.A., **P.B. Kelemen** and K. Hanghøj, Cooling Rates in the Lower Crust of the Oman Ophiolite: Ca in Olivine, Revisited, *Eos Trans. AGU*, 88(52), Fall Meet. Suppl., V53D-07, 2008.
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