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 ….
1985 M.Sc., University of Washington. Project advisor: Dr. Bernard Evans. Geology of the Big Jim Complex
1980 A.B. cum laude, with high distinction in Earth Sciences, Dartmouth College.

Academic Employment & Awards

2021-present Editorial Board, Proceedings of the National Academy of Sciences
2021 American Geophysical Union (AGU) Hess Medal
2021-22 Royal Society Working Group on Geological CO_2 Storage
2019-present Member, NASA Mars 2020 Rover Science Team
2018-present Guest Associate Editor, Special Isseu on Ophiolites and Oceanic Lithosphere, J. Geophys. Res.
2018-22 Associate Editor, Frontiers in Climate, Negative Emissions Technology Specialty
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
2014-2021 Guest Associate Editor, Proceedings of the National Academy of Sciences
2014-present Member, US National Academy of Sciences
2014-17 Chair, Dept. of Earth & Environmental Sciences, Columbia University
2014-16 Lenfest Distinguished 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 American Geophysical Union Bowen Award
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: geologic mapping, NW Himalaya, India

Professional Employment

2021-present Advisor, 44.01, startup commercializing CO_2 storage via carbon mineralization in peridotite

2021-present Consultant, Creative Carbon Solutions LLC

2020-present Advisor, EquiOpps, aka Heirloom Carbon Technologies, startup commercializing CO_2 removal from air

2019-2020 Consultant, 'Neglected Climate Opportunities LLC, and some others (confidential)

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:

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

Generals committee/PhD committee member for:

Owen Evans	Columbia 2021	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	S Carolina 2008	Nicholas Austin	MIT 2008
Jessica Warren	WHOI/MIT 2007	Michael Johnsen	W Wash, MSc 07	Kevin Wheeler	Columbia 2007
Richard Katz	Columbia 2006	Anna Cipriani	Columbia, 2006	Zachary Morgan	Brown 2006
Matt Rioux	UCSB 2005	Andrew Greene	W Wash, MSc 03	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:

Juan Carlos de Obeso	2019-20	James Leong	2020-22		
Stacia Gordon	2010	Kristoffer Szilas	2012-14	Sarah Lambart	2013-15
Ben Holtzman	2004-05	Taber Hersum	2005-06	John Rudge	2007-08
Karen Hanghøj	1999-00	Laurent Montesi	2001-02	Magali Billen	2002-03
Carlos Garrido	1995-98	Matthew Jull	1998-02	Othmar Muentener	1998-99

Courses

2022- Geological Carbon Storage, Columbia University School of Engineering & Applied Science

2017- present Igneous & Metamorphic Processes in Crust Formation & Evolution, Columbia University

2011-18 Co-convenor, with A. Hofmann and others, Solid Earth Geochemistry seminar, Columbia

2010- present Earth Resources and Sustainable Development, Columbia University

2007 Graduate field course, Columbia, Brown, … with Greg Hirth

2006- 19 Introduction to Petrology, Columbia University, every other spring

2005-present Reading seminars in petrology & geochemistry, Columbia University, 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 Alumi 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

2020 Energy Frontiers Initiative, Rock Solid, Harnessing Mineralization for Large Scale Carbon Management

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, Oceanic Lithosphere & Scientific Drilling into 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 Scientifc 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

2022-2024	Dept. of Energy ARPA-E Award to Rio Tinto, for research on CO2 storage via carbon mineralization in the Tamarack intrusion, Minnesota, with Columbia co-PI's Peter Kelemen & Alissa Park
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 Yogodzinksi (U S Carolina), J Vervoort (Washington State) PI's, $31,027 at Columbia
2006-08	Columbia Initiative in Science and Engineering Gant, 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 H_2O 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 Ghiorso & 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

Patent application 63/155,572**,** filed by Columbia University on March 3 2021, "Systems and Methods for Enhanced Weathering and Calcining for CO2 Removal from Air," inventors: Peter B. Kelemen, Wade McGillis, Tom Mortimer (Columbia University), Noah McQueen & Jennifer Wilcox (Worcester Polytechnic Institute), and Greg Dipple (University of British Columbia)

Patent application 62/865,708, filed by Columbia University on Jun. 24, 2019, "Systems and Methods for Enhanced Weathering and Calcining for CO2 Removal from Air," inventors: Peter B. Kelemen (Columbia University), Noah McQueen & Jennifer Wilcox (Worcester Polytechnic Institute), Phil Renforth (Heriot-Watt University) and Greg Dipple (University of British Columbia)

US Patents 8524152 & 9193594: Systems and methods for enhancing rates of in situ carbonation of peridotite, Peter B. Kelemen, Jürg M. Matter, and Columbia University

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Editorial

2021-present	Editorial Board, Proceedings of the National Academy of Sciences
2018-present	Guest Associate Editor, Special Isseu on Ophiolites and Oceanic Lithosphere, J. Geophys. Res.
2018-22	Associate Editor, Frontiers in Climate, Negative Emissions Technology Specialty
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
1996-1999	Editorial Board, Geology
1995-96	Editor, Special Lherzolite Volume of Chemical Geology

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Leong, J.A., M. Nielsen, N. McQueen, R. Karolyte, D.J. Hillegonds, C. Ballentine, T. Darrah, W. McGillis and **P.B. Kelemen**, H2 and CH4 outgassing rates in the Samail ophiolite, Oman: Implications for low-temperature, continental serpentinization rates, Geochim. Cosmochim. Acta, submitted April 2022.

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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, relamination 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, Münich, 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 CO_2 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 CO_2 removal from air at the gigaton scale"

2020

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

NASA Mars 2020 Science Team Working Groups: several talks in spring and summer on serpentinization and carbon mineralization in ultramafic rocks

Caltech: Carbon mineralization for CO2 removal from air and/or permanent solid storage, June 11

Society of Petroleum Engineers, Western Region: Carbon mineralization for CO2 removal from air and/or permanent solid storage, June 25

Energy Futures Initiative Mineralization Workshop: **two talks**, Subsurface carbon mineralization for CO_2 removal from air and permanent, solid storage, **and** Surficial carbon mineralization for CO_2 removal from air (CDR aka DAC) with recycling of MgO, CaO, Na_2O, August

Oil & Gas Climate Initiative: Rates and processes of carbon mineralization in abundant, natural, Mg- and Ca-rich rocks for greenhouse gas mitigation, September 14

Oil & Gas Climate Initiative: Carbon Dioxide Removal from air, CDR, via carbon mineralization, September 28

MIT: Carbon mineralization for CO2 removal from air and/or permanent solid storage, September 30

Calgary: Rates and processes of carbon mineralization in abundant, natural Mg- and Ca-rich rocks for greenhouse gas mitigation, December 2020

2021

Geological Survey of California: UCSB: Rates and processes of carbon mineralization in abundant, natural Mg- and Ca-rich rocks for greenhouse gas mitigation, February 2021

University of Copenhagen: Rates and processes of carbon mineralization in abundant, natural Mg- and Ca-rich rocks for greenhouse gas mitigation, February 2021

UCSB: Rates and processes of carbon mineralization in abundant, natural Mg- and Ca-rich rocks for greenhouse gas mitigation, February 2021

Duke: Rates and processes of carbon mineralization in abundant, natural Mg- and Ca-rich rocks for greenhouse gas mitigation, February 2021

Adam Smith Society, Panel on the Energy Transition, March 2021

Carbon mineralization for CO2 removal from air and solid storage, Earth Day, Hostos Community College, April 2021

Greenhouse gas mitigation and the energy transition, Wilmington Friends School, Wilmington DE, May 2021

Carbon mineralization primer, Rio Tinto Mining Group, May 2021

Carbon mineraliation primier, BHP mining company, November 2021

Greenhouse gas mitigation, Columbia Climate Board of Advisors, June 2021

Carbon mineralization for CO2 removal from air and solid storage, Rutgers University, September 2021

Genesis of oceanic crust, Oxford University Katz seminar, October 2021

Carbon mineralization for CO2 removal from air and solid storage, ICEF Roadmap, Innovation for Cool Earth Forum, Japan, October 2021

Carbon mineralization for CO2 storage, Royal Society of London, October 2021

Carbon mineralization for CO2 removal from air and solid storage, ICEF Roadmap, Linden Trust, November 2021

Carbon mineralization for CO2 removal from air and solid storage, ICEF Roadmap, NRDC briefing, November 2021

Carbon mineralization for CO2 removal from air and solid storage, ICEF Roadmap, World Resources Institute briefing, November 2021

Panel discussion: How Can Carbon Mineralization Help Fight Climate Change?, Center for Global Energy Policy, December 2021

2022

Carbon mineralization for CO2 removal from air and solid storage, Center for Global Energy Policy, All Hands Meeting, January 2022

Carbon mineralization for CO2 removal from air and solid storage, Open Air This is CDR lecture series, April 2022

Keynote, Carbon mineralization for CO2 removal from air and permanent solid storage, Goldschmidt Conference, Honolulu, August 2022

Carbon mineralization for CO2 removal from air and permanent solid storage, Lehigh University, *scheduled*, September 2022

Carbon mineralization for CO2 removal from air and permanent solid storage, Warren Seminar, University of Minnesota, *scheduled*, November 2022

2023

Carbon mineralization for CO2 removal from air and permanent solid storage, University of Wyoming, *scheduled*, May 2023

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., Yogodzinksi, 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

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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., DI51A-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.

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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.

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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.

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White, S.M., C. Wyatt, G.M. Yogodzinsksi, **P.B. Kelemen** and D.W. Scholl, Back-arc Seamount Distribution Along the Western Aleutian Volcanic Arc, Eos Trans. AGU, 88(52), Fall Meet. Suppl., V43D-1627, 2008.

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2009

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2010

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2011

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