

Przemyslaw Dera, Ph.D.

*Hawaii Institute of Geophysics and Planetology,
School of Ocean and Earth Science and Technology, University of Hawaii at Manoa
1680 East West Road, POST Bldg, Office 819E, Honolulu, Hawaii 96822
Phone: (808) 956-6347, Fax: (808) 956-3188, E-mail: pdera@hawaii.edu*

APPOINTMENTS

Hawaii Institute of Geophysics and Planetology, University of Hawaii at Manoa

2013/8- Associate Researcher (Assoc. Professor equivalent, tenure track)

Department of Geology, University of Illinois at Urbana-Champaign

2011/5-2013/1 Adjunct Associate Professor

Center for Advanced Radiation Sources, The University of Chicago

2013/8-2014/8 Visiting Scholar

2010/4-2013/8 Senior Research Associate (tenured)

2007/6-2010/4 Research Beamline Scientist (tenure track)

Geophysical Laboratory, Carnegie Institution of Washington

2003-2007 Associate Staff Scientist (principal investigator)

2002-2003 Senior Research Scientist

2000-2002 Distinguished Barbara McClintock Postdoctoral Fellow

1998 Predoctoral Fellow

PROFESSIONAL PREPARATION

Adam Mickiewicz University, Poznan, Poland
M.Sc. in Theoretical Chemistry (*Summa Cum Laude*) **1995**

Adam Mickiewicz University, Poznan, Poland
Ph.D. in Physical and Theoretical Chemistry **2000**

SCIENTIFIC CONSULTING ACTIVITIES

2003-2004 Rigaku MSC company

2007-2009 University of Nevada, Las Vegas

2007-2008 International Union of Crystallography Commission on High Pressure

2007-2013 InXitu, Inc. company

2013-2014 University of Arizona, Tucson

2013-2014 SETI Institute

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AWARDS AND HONORS

- 2014-2015 Consortium for Materials Properties Research in Earth Sciences
Distinguished Lecturer
- 2013 Elected Fellow of the Mineralogical Society of America
- 2000 Distinguished Barbara McClintock Postdoctoral Fellowship,
Carnegie Institution of Washington
- 1995 Graduated *Summa Cum Laude*
- 1995 Medal of the President of AMU for distinguished undergraduate
achievements
- 1995 Shared I-II prize for the best MSc thesis at the Chemistry
Department AMU

GRANTS AND EXTERNAL RESEARCH SUPPORT

Total Value of All Grants Awarded in Current Position **\$2,880,563**

Total Value of Grants Awarded as Lead or Science-PI in Current Position = **\$2,730,074**

Total Value of Grants Awarded as Co-PI in Current Position = **\$150,489**

Total Value of All Grants Awarded prior to Current Position **\$2,456,000**

Total Career Value of All Grants **\$4,998,563**

Grants Awarded as lead PI since joining University of Hawaii:

1. Status: Current/active (duration 09/01/2013-8/31/2017). Carnegie-DOE Alliance Center (DOE-NNSA) **\$230,145** (years 1-4 budget) "From compression behavior of molecular forces to factors controlling thermochemistry and stability for stockpile materials" PI: P. Dera (University of Hawaii)
2. Status: Current/active (duration 03/01/2014-2/28/2017). NSF EAR Geophysics (co-funding from Geochemistry and Petrology and EPSCoR), **\$515,020** EAR1344942 "Metastable transformations of pyroxenes in subducting slabs" PI: P. Dera (University of Hawaii),
3. Status: Current/active (duration 06/01/2014-05/31/2017). COMPRES subcontract (NSF EAR IF) **\$721,492** (only year 1-3 budget) under NSF Cooperative Agreement EAR 11-57758 "Partnership for Extreme Xtallography and COMPRES Technology Office - Operation" PI: P. Dera (University of Hawaii),
4. Status: Current/active (duration 06/01/2014-05/31/2015). COMPRES subcontract (NSF EAR IF) **\$195,236** under NSF Cooperative Agreement EAR 11-57758 "Partnership for Extreme Xtallography – Instrumentation Supplement" PI: P. Dera (University of Hawaii).
5. Status: Current/active (duration 09/01/2014-08/31/2016). NSF EAR Geoinformatics, **\$468,186**, EAR1440005 "Collaborative Proposal: ATREX - integrated open source data analysis software for mineral and environmental sciences" PI: P. Dera (University of Hawaii), Co-Is: L. Ehm (Stony Brook University) and B. Chen (University of Hawaii at Manoa)

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6. Status: Current/active (duration 04/15/2016-4/14/2019) NSF EAR Instrumentation and Facilities, **\$599,994** "Development of X-ray Atlas, a high-brilliance high-sensitivity high-load-capacity X-ray diffractometer for mineralogy and mineral physics research at the University of Hawaii" PI: P. Dera (University of Hawaii).

Grants Awarded as co-I since Current Position:

1. Status: Current (duration 09/01/2015-08/31/2018) Software Infrastructure for Sustained Innovation, \$559,701 (UH subcontract budget **\$43,765**) "Integration of Synchrotron X-ray Analysis Software Methods into the Larch Framework" PI: M. Newville (University of Chicago), co-I: P. Dera (University of Hawaii)
2. Status: Current (duration 10/01/2015-09/31/2017) Earth Cube Integrative Activities, (UH subcontract budget **\$34,922**) "EarthCube Integrative Activities: Collaborative Proposal: Interdisciplinary Earth Data Alliance as a Model for Integrating Earthcube Technology Resources and Engaging the Broad Community" PI: K. Lehnert (Columbia University), Co-I: P. Dera (University of Hawaii at Manoa) and several others.
3. Status: Current (duration 10/01/2015-09/31/2017) NASA SERA, (**\$32,732** Consulting Agreement to UH) "Support for the CheMin mineralogical instrument during the Mars Science Laboratory 2015-2016 extended mission" PI: D. Blake (NASA AMES), R.T. Downs (University of Arizona), Co-I: P. Dera (University of Hawaii at Manoa) and several others
4. Status: Recommended for funding (proposed duration 10/01/2015-09/31/2018) NASA NNH14ZDA001N-PICASSO, (**\$36,000** Consulting Agreement to UH) "Miniature Guinier X-ray Diffraction Instrument for Planetary Exploration" PI: P. Sarrazin (SETI Institute) Co-I: P. Dera (University of Hawaii at Manoa) and several others.

Other notable Proposals Submitted as Lead PI:

1. Status: Pending (proposed duration 08/15/2016-08/14/2021) NSF NRT, **\$2,995,704** "NRT-DESE: Natural and geo-inspired materials – cyber-enabled materials discovery for improved environmental and energy resource management" PI: P. Dera (University of Hawaii), Co-Is: B. Chen, H. Ishii, G Jacobs (University of Hawaii), B. Kiefer (New Mexico State University)

Grants Awarded Prior to Joining University of Hawaii:

2009: Co-I (PI: P. Sarrazin, InXitu, Inc.) and Senior Scientific Consultant on NASA ASTID (Astrobiology Science and Technology Instrument Development) grant (\$850K over three years) Development of hybrid powder – single crystal X-ray diffraction instrument for planetary mineralogical analysis of unprepared samples.

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2009: PI on NATO Science for Peace and Security grant (\$75K over six months) for support of the International School of High Pressure Crystallography in Erice, Italy.

2008: PI on COMPRES (Consortium for Materials Properties Research in Earth Sciences) grant (\$5K) for support of the International School of High Pressure Crystallography in Erice, Italy.

2007: Co-PI on NASA SBIR phase I grant (\$100K over six months) Development of hybrid powder – single crystal X-ray diffraction instrument for planetary mineralogical analysis of unprepared samples.

2005: Co-PI (PI M.F. Nicol, UNLV) on NSF DMR MRI grant DMR0217389 (\$713K over three years) Development of New Diamond Cell Technology for Ultrahigh-Pressure Single-Crystal Structure Analysis Using X-ray Diffraction.

2004: PI on COMPRES (Consortium for Materials Properties Research in Earth Sciences) grant (\$25K) for support of the International Workshop on Single crystal Diffraction at Megabar Pressure in Chicago, IL.

2002: Co-PI (PI H.-K. Mao, CIW) NSF EAR IF grant EAR0217389 (\$350K over 3 years) “Development of New Diamond Cell Technology for Ultrahigh-Pressure Single-Crystal Structure Analysis Using X-ray Diffraction”

GRADUATE AND POSTDOCTORAL ADVISORS

M.Sc. Thesis:

Prof. Jerzy Konarski (Adam Mickiewicz University, Poznan, Poland),

Ph.D. Thesis:

Prof. Andrzej Katrusiak (Adam Mickiewicz University, Poznan, Poland),

Dr. Larry W. Finger (Carnegie Inst. of Washington),

Postdoctoral:

Dr. Charles T. Prewitt (Carnegie Inst. of Washington).

COURSES TAUGHT

University of Hawaii, Department of Geology and Geophysics

Geology 301: Mineralogy (undergraduate)

University of Illinois at Urbana Champaign, Department of Geology

Geology 531: Advanced Structural Mineralogy (Geology 531)

Adam Mickiewicz University, Poznan, Poland, Chemistry Department

Crystallography for chemists

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Crystallography for geologists

Applications of mathematics in chemistry

Computational chemistry

SERVICE

University Committees

- Chair, Search Committee for PX² Beamline Scientist, HIGP, University of Hawaii (2014)
- Chair, Search Committee for COMPRES Technology Officer, HIGP, University of Hawaii (2014)
- Member, Graduate Admissions Committee, Department of Geology and Geophysics, University of Hawaii at Manoa (2013)
- Member, Evaluation Committee for Faculty on Annual Contracts, HIGP, University of Hawaii at Manoa (2013)
- Member, Search Committee for HIGP Institute Director, HIGP, University of Hawaii at Manoa (2013)
- Chair, Search Committee for COMPRES Technology Officer/Assistant Research Professor, Department of Geology, University of Illinois, Urbana Champaign (2012)
- Member of a Ph.D. Examination Committee, Gregory Finkelstein, Department of Geosciences, Princeton University (2014)
- Member of a Ph.D. Examination Committee, Jin Zhang, Department of Geology, University of Illinois, Urbana-Champaign (2013)
- Member of a Ph.D. Examination Committee, Madison Barkley, Department of Geosciences, University of Arizona, Tucson (2008)
- Member of a Ph.D. Dissertation Review Committee, Shannon Morrison, Department of Chemistry, George Washington University (2005)

Community organizations

- Member, Mineralogical Society of America Fellow Nomination Committee (2014-)
- Interim Vice Chair of the Executive Committee, Consortium for Materials Properties Research in Earth Science (2012-2013)
- Chair, Nominations Committee, Consortium for Materials Properties Research in Earth Science (2011)
- Member of the Executive Committee, Consortium for Materials Properties Research in Earth Science (2010-2013)

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- Chair, International Union of Crystallography Commission on High Pressure (2008-2014).

Editorial service

- Guest Editor, High Pressure Research 2010
- Co-Editor, NATO Science for Peace and Security Series B volume, 2010
- Associate Editor, American Mineralogist (2006-2009)
- Guest Editor, Journal of Synchrotron Radiation 2005

Conference organization

- Chair and co-Editor in Chief, Mineral Physics Long Range Planning Workshop 2014, Argonne, IL
- Member of the Organizing Committee for the 2014 NSF EarthCube Workshop on Mineral Physics and Rock Deformation, Washington, D.C.
- Member of the International Program Committee for the 2014 International Conference on Boron and Borides in Honolulu, HI
- Member of the International Program Committee for the 2014 IUCr Congress in Montreal, Canada
- Chair of the International Program Committee for IUCr HP Commission Workshop in Hamburg, Germany, 2013.
- Chair of the International Program Committee for IUCr HP Commission Workshop in Mito, Japan, 2012.
- Chair of the International Program Committee for IUCr HP Commission Workshop in Gatlinburg, TN, 2010.
- Director of the International School of High-Pressure Crystallography, Erice, Italy (2009) (*125 participants from 25 countries*).
- Chair of the International Program Committee for IUCr HP Commission Workshop in Harbin, China, 2009.
- Organized and chaired Workshop on Free Crystallographic Software for Mineral Physics Community at COMPRES annual Meeting, 2008.
- Member of the International Program Committee for IUCr HP Commission Workshop in Oxford, UK, 2007.
- Chaired an oral session on mineral physics of core mantle boundary at the 2006 AGU annual meeting.
- Organized and chaired International Workshop on High-pressure Crystallography at a Megabar in Chicago, 2004 (*60 participants from 5 countries*).

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- Organized and chaired a symposium on high-pressure crystallography at Center for Materials Research at Extreme Conditions in Miami, 2003.
- Organized a symposium on hydrothermal systems at American Geophysical Union meeting in San Francisco, 2002.

Review service

- Member of the Beamline Review Panel, Diamond Light Source, UK (2009)
- Panelist, NSF Division of Materials Research Major Research Instrumentation Program (2009)
- Proposal Reviewer, European Synchrotron Radiation Facility (2012)
- Member of the APS Proposal Review Panel for High Pressure Science (2009-2014)
- Chair of the APS Proposal Review Panel for High Pressure Science (2009-2014)
- Member of the NSLS Proposal Review Panel (2009-2011)
- Grant Proposal Reviewer, NSF EAR CSEDI Program (2014)
- Grant Proposal Reviewer, NSF EAR Geophysics Program (2014)
- Grant proposal reviewer, Helmholtz Association of German Research Centers (2010)
- Grant Proposal Reviewer, Czech Science Foundation (2015)
- Grant proposal reviewer, ACS Petroleum Research Fund (2010)
- Member of American Crystallographic Association, American Geophysical Union, and Mineralogical Society of America
- Served as peer reviewer for the following international scientific journals: Acta Crystallographica, American Mineralogist, Crystal Growth and Design, Earth and Planetary Science Letters, Geochemica and Cosmochemica Acta, Inorganic Chemistry, Journal of American Chemical Society (JACS), Journal of Applied Physics, Journal of Physical Chemistry, Journal of Synchrotron Radiation, Physica B, Physics Today, Journal of Chemical Physics, Journal of Materials Science, Materials Chemistry and Physics, Microporous and Mesoporous Materials, Physica Status Solidi, Journal of Solid State Physics, Physics and Chemistry of Minerals, Physics of Earth and Planetary Interiors, Scientific Reports (Nature Group), Zeitschrift für Kristallographie, American Geophysical Union monograph series: Frontiers of Science, Journal of American Chemical Society, Nano Research, High Pressure Research

CONFERENCE PRESENTATIONS, COLLOQUIA AND SEMINARS

Contributed conference oral presentations

Center for High pressure Research Meeting, Washington DC, 2000

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Workshop of the High Pressure Commission of the IUCr, Spring-8, Japan, 2000
European High-Pressure Research Group Meeting, Closter Banz, Germany 2001
Kyoto Crystallographic Computing School, Kyoto, Japan 2008

Invited talks at national and international conferences

American Chemical Society Meeting, San Diego 2001
European Crystallographic Congress, Krakow, 2001
Workshop of the High Pressure Commission of the IUCr, Paris, 2001
Pittsburgh Diffraction Conference, Cincinnati, 2001
Center for Science at Extreme Conditions Meeting, Miami, 2002
Geological Society of America Meeting, Seattle, 2003
American Geophysical Union Meeting, San Francisco, 2003
Gordon High Pressure Research Conference, Meriden, 2004
Denver Diffraction Conference, Denver 2004
Congress of the International Union of Crystallography, Florence, 2005
Open meeting of the IUCr Commission on High Pressure, Florence, 2005
American Geophysical Union Annual Meeting, San Francisco, CA, 2006
International Conference on Laue Diffraction, Grenoble, France, 2007
High-pressure research in Geoscience and Materials Science, ANL, Chicago, IL 2007
SNAP Workshop, ORNL, Oak Ridge, TN, 2008
COMPRES Annual Meeting, Colorado Springs, CO, 2008
Workshop on New High-pressure beamline at PETRA-III, Hamburg, Germany, 2009
International School on High Pressure Crystallography, Erice, Sicily, 2009
International Workshop on Advanced High-pressure Crystallography, Harbin, China, 2009
International AIRAPT meeting, Tokyo, Japan, 2009
COMPRES International workshop on Brillouin Scattering, Chicago, IL, 2009
ALS Annual user meeting, Berkeley, CA, 2011
ALS Annual user meeting, Berkeley, CA, 2012
AGU fall meeting, San Francisco, CA, 2012
AGU fall meeting, San Francisco, CA, 2013
Canadian Chemistry Conference, Quebec City, 2013
APS Annual user meeting, Argonne, IL, 2014

Invited Departmental Colloquia and seminars

State University of New York, Stony Brook, NY, 2003
National Synchrotron Light Source, Brookhaven, NY 2003
Advanced Photon Source, Chicago, IL, 2003

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*High Pressure Collaborative Access Team, Chicago, IL, 2003
University of Illinois at Urbana-Champaign, Urbana, IL 2004
Bayerisches Geoinstitut, Bayreuth, Germany, 2004
AMU Chemistry Department, Poznan, Poland 2004
Advanced Photon Source, Chicago, IL, 2006
Division of Earth Science, NSF, Arlington, VA, 2011
Princeton University, Princeton, NJ, 2011
Geophysical Lab, Carnegie Institution of Washington, Washington, DC, 2012
University of Hawaii, Honolulu, HI, 2012
Northwestern University, Evanston, IL, 2013
University of Nevada at Las Vegas, Las Vegas, NV, 2013
Geophysical Lab, Carnegie Institution of Washington, Washington, DC, 2014
Concord University, Athens, WV, 2015 (COMPRES DSL lecture)
Illinois State University, Normal, IL, 2015 (COMPRES DSL lecture)
Michigan State University, Lansing, MI, 2015 (COMPRES DSL lecture)
Colorado State University, Fort Collins, CO, 2015 (COMPRES DSL lecture)
New Mexico State University, Las Cruces, NM, 2015 (COMPRES DSL lecture)
Stony Brook University, Stony Brook, NY 2015*

SUPERVISED GRADUATE STUDENTS AND POSTDOCTORAL FELLOWS:

Kamil Dziubek (AMU, Poland), Armand Budzianowski (AMU, Poland), Dr. Lars Ehm (GL, CIW), Dr. Olga Degtyareva (GL, CIW), Dr. Lauren A. Borkowski (UNLV), Dr. Barbara Lavina (UNLV), Yi Hu (UHM), Hannah Shelton (UHM)

COLLABORATORS

Prof. A. Campbell (University of Chicago), Prof. R.T. Downs (Univ. of Arizona, Tucson), Prof. T.S. Duffy (Princeton Univ.), Dr. M. Somayazulu (CIW), Prof. J. Li (Univ. of Michigan), Prof. J.D. Bass (Univ. of Illinois, Urbana Champaign), Prof. John Parise (SUNY Stony Brook), Prof. S.D. Jacobsen (Northwestern University), Prof. J.F. Lin (University of Texas, Austin), Prof. J.R. Smyth (University of Colorado)

PEER REVIEWED JOURNAL PUBLICATIONS AND BOOK CHAPTERS

MARKED IN GREEN ARE PUBLICATION WITH UNIVERSITY OF HAWAII AFFILIATION

Authorship conventions – significance of authorship order:

In experimental mineral physics majority of research is conducted by small teams of scientists (2-10 people), including academic researchers, their students and facility instrument support scientists at state-of-the-art national user facilities. Resulting peer reviewed journal, publications are typically co-authored by all of these contributors. The

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person who designed the project, and was the principal investigator on the beam time (instrument access) proposal is typically the **first author**. This is often a graduate student, if the experiment is part of thesis research. The team member who, besides the first author, most significantly contributed to the project (typically in conducting the experiment, analyzing the results, or writing the manuscript) is usually listed as the **second author** of the publication. Senior member of the team (PI of the group) is usually listed as the **last author**, although in some cases of multi-institutional collaborations, members of each institution may be listed together, so that the senior PI of the lead team may be listed as the last author from that institution, but not the very last on the author list. All authors are required to make some valuable contributions to the project and manuscript preparation to warrant inclusion on the publication author list.

Estimated **percent effort contribution** to the publication is given in square brackets.

EDITED OR CO-EDITED BOOKS AND JOURNAL SPECIAL VOLUMES

- [3] Dera P. and Boldyreva E. (Eds) “High-pressure Crystallography: Advanced New Armor Materials and Protection from Explosives” NATO Science for Peace and Security Series B: Physics and Biophysics (2010) Springer Inc. [75%]
- [2] Dera P., Prewitt C.T. and Jacobsen S.D. (Eds) Journal of Synchrotron Radiation (2005) special volume 12, “Structure determination by single-crystal X-ray diffraction (SXD) at megabar pressures”. [75%]
- [1] Liu, H., Wang L., Dera P. (Eds) High Pressure Research (2010) special volume 30, “Crystallography at high pressure”. [10%]

BOOK CHAPTERS

- [4] Lavina B., Dera P. and Downs R.T. “Modern X-ray Diffraction Methods in Mineralogy and Geosciences” (2014) Reviews in Mineralogy & Geochemistry, Mineralogical Society of America, Vol. 78, pp. 1-31. [40%]
- [3] Dera P. “Introduction to high-pressure science” in Dera P. and Boldyreva E. (Eds) “High-pressure Crystallography: Advanced New Armor Materials and Protection from Explosives” NATO Science for Peace and Security Series B: Physics and Biophysics (2010) Springer Inc. [100%]
- [2] Dera P. “All different flavors of synchrotron single-crystal x-ray microdiffraction” in Dera P. and Boldyreva E. (Eds) “High-pressure Crystallography: Advanced New Armor Materials and Protection from Explosives” NATO Science for Peace and Security Series B: Physics and Biophysics (2010) Springer Inc. [100%]

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- [1] Hemley R.J., Dera P. “Molecular solids” chapter 15 in R.M. Hazen ed., Comparative Crystal Chemistry, Reviews in Mineralogy Vol. 41 (2001). [50%]

JOURNAL ARTICLES - SUBMITTED

- [94] Zhang D., Hu Y., and Dera P. “Compressional behavior of omphacite to 47 GPa” submitted to Phys. Chem. Minerals [50%]
- [93] Hu Y., Wu Z., Bina C. and Dera P. “Thermodynamic and elastic properties of pyrope at high pressure and high temperature by first-principles calculations” submitted to Journal of Geophysical Research: Solid Earth [10%]
- [92] Zhang J.S., Hu Y., Shelton H., Kung J. and Dera P. “Single crystal X-ray diffraction study of Fe₂SiO₄ fayalite up to 31 GPa and its implications to subduction zone dynamics” submitted to Earth and Planetary Science Letters [50%]
- [91] Shelton H., Barkley M.C., Dera P., Downs R.T. and Miletich R. “Hydrogen bond effects on compressional behavior of isotopic minerals: High-pressure polymorphism of Be(OH)₂” submitted to Physics and Chemistry of Minerals. [50%]

JOURNAL ARTICLES - ACCEPTED

JOURNAL ARTICLES - PUBLISHED

2016

- [90] Hushur A., Manghnani M.H., Werheit H., and Dera P. “High-pressure phase transition makes B_{4,3}C boron carbide a wide-gap semiconductor” (2016) Journal of Physics: Condensed Matter **28**, 045403 [10%]
- [89] Miller R.G., Narayanswamy S., Clark S.M., Dera P., Jameson G.B., Tallon J.L. and Brooker S. “Pressure induced separation of abrupt vs gradual components of spin crossover: structure of the pressure-induced low-spin state” (2016) Dalton Transactions **44**, 20771-21154. [10%]

2015

- [88] Chang Y.-Y., Jacobsen S.D., Bina C.R., Thomas S.-M., Smyth J.R., Frost D.J., Boffa-Balaran T., McCammon C.A., Hauri E.H., Inoue T., Meng Y., and Dera P. “Comparative compressibility of hydrous wadsleyite and ringwoodite: Effect of H₂O on dK/dP and implications for detecting water in the transition zone” (2015) Journal of Geophysical Research **120**, 8259–8280. [10%]

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- [87] Wolf A.S., Jackson J.M., Dera P., Prakapenka V. “The Thermal Equation of State of (Mg, Fe)SiO₃ Bridgmanite (Perovskite) and, Implications for Lower Mantle Structures” (2015) *Journal of Geophysical Research*, **120**, 7460–7489. [10%]
- [86] Finkelstein G.J., Dera P. and Duffy T.S. "High-Pressure Phases of Cordierite From Single-Crystal X-Ray Diffraction to 15 GPa" (2015) *American Mineralogist* **100**, 1821-1833. [30%]
- [85] Finkelstein G.J., Dera P. and Duffy T.S. “New Highly-Coordinated High-Pressure Metastable En₉₁ Orthopyroxene Structures from Single-Crystal X-Ray Diffraction” (2015) *Physics of the Earth and Planetary Interiors* **244**, 78-96, 2015. [30%]
- [84] Somayazulu M., Dera P., Smith J. and Hemley R.J. “Structure and Stability of solid Xe(H₂)_n” (2015) *Journal of Chemical Physics* **142**, 104503. [20%]
- [83] Hu Y., Dera P. and Zhuravlev K. “Single-crystal diffraction and Raman spectroscopy of hedenbergite up to 33 GPa” (2015) *Physics and Chemistry of Minerals* **42**, 595-608. [50%]
- [82] Ma C., Tschauner O., Beckett J.R., Liu Y., Rossman G.R., Zhuravlev K., Prakapenka V., Dera P., Taylor L.A. “Tissintite, (Ca,Na,□)AlSi₂O₆, a highly defective shock-induced high-pressure clinopyroxene from the Tissint Martian meteorite” (2015) *Earth and Planetary Science Letters*, **422**, 194–205. [10%]

2014

- [81] Bish D., Blake D., Vaniman D., Sarrazin P., Bristow T., Achilles C., Dera P., Chipera S., Crisp J., Downs R.T., Farmer J., Gailhanou M., Ming D., Morookian J.M., Morris R., Morrison S., Rampe E., Treiman A. and Yen A. “The First X-ray Diffraction Measurements on Mars” (2014) *International Union of Crystallography Journal*, **1**, 514-522. [10%]
- [80] Dera P. “A simple approach to understand the high-pressure calcium conundrum” (2014) *Acta Cryst.* **B70**, 401-402. [100%]
- [79] Fischer R.A., Campbell A.J., Caracas R., Reaman D.M., Heinz D.L., Dera P., and Prakapenka V.B. “Equations of state in the Fe-FeSi system at high pressures and temperatures” (2014) *Journal of Geophysical Research Solid Earth*, **119**, 2810–2827. [10%]
- [78] Posner E.S., Dera P., Downs R.T., Lazarz J.D. and Irmen P. “High-pressure single-crystal X-ray diffraction study of jadeite and kosmochlor” (2014) *Physics and Chemistry of Minerals* **41**, 695-707. [30%]

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