



David Pollard

The Barney and Estelle Morris Professor of Earth Sciences, Emeritus
Earth & Planetary Sciences

Bio

BIO

I use quantitative field data and principles of structural geology, combined with laboratory and computer modeling, to address fundamental questions about processes of faulting, fracturing and rock deformation. Geologic structures play important roles in attempts to utilize nature's gifts wisely and to mitigate natural hazards. My research aims to understand how faults and fractures affect the flow of magma, groundwater, and hydrocarbons, and the crucial role fractures play in earthquake generation and volcanic eruption.

ACADEMIC APPOINTMENTS

- Emeritus Faculty, Acad Council, Earth & Planetary Sciences

ADMINISTRATIVE APPOINTMENTS

- Research Associate, Geology, Stanford University, (1969-1970)
- Assistant Professor, Geological Sciences, University of Rochester, (1970-1974)
- Geophysicist and Project Chief, U. S. Geological Survey Menlo Park CA, (1974-1983)
- Consulting Assistant Professor, Geology, Stanford University, (1975-1976)
- Consulting Associate Professor, Geology, Stanford University, (1976-1979)
- Visiting Scientist, Earth and Planetary Sciences, M.I.T., (1980-1981)
- Associate Professor, Applied Earth Sciences, Stanford University, (1983-1986)
- Associate Professor, Geology, Stanford University, (1984-1986)
- Professor, Applied Earth Sciences and Geology, Stanford University, (1986-1993)
- Professor by Courtesy, Geophysics, Stanford University, (1987-2015)
- Visiting Fellow and Visiting Professor, Princeton University, (1991-1992)
- Professor, Geological & Environmental Sciences, Stanford University, (1993-2015)
- Professor by Courtesy, Civil and Env. Eng., Stanford University, (1998-2015)
- Visiting Professor, The University of Edinburgh, Scotland, (2000-2000)
- Visiting Scholar, University of Washington, (2010-2010)

HONORS AND AWARDS

- R.W. Strehle Memorial Award in Geology, Pomona College (1965)
- Graduate Fellowship, National Science Foundation (1965 - 1968)
- Post-doctoral Fellowship, National Science Foundation (1968 - 1969)

- Applied Research Award, U. S. National Committee on Rock Mechanics (1987)
- Outstanding Teacher Award, School of Earth Sciences, Stanford University (1987 - 1988)
- Centennial Author, Geological Society of America Bulletin (1988)
- Senior Hess Fellow, Princeton University (1992)
- Barney and Estelle Morris Professor of Earth Sciences, Stanford University (1993 - 2015)
- Woodford-Eckis Lectureship, Pomona College (1996)
- Fellow, Geological Society of America (1996 - Present)
- Fellow, American Geophysical Union (2007 - Present)
- Best Paper of the Year Award, Structural Geology and Tectonics Division, Geological Society of America (2007)
- Career Contribution Award, Geological Society of America, Structure and Tectonics Division (2016)

BOARDS, ADVISORY COMMITTEES, PROFESSIONAL ORGANIZATIONS

- Member, School of Earth Sciences, Dean's Earth Sciences Council, Stanford University (1992 - 2000)
- Member, Editorial Advisory Board, Journal of Structural Geology (1993 - 2000)
- Representative, GES Dept., GIS Laboratory Coordinating Committee, Stanford University (1994 - 2000)
- Member, Dean of Research, Faculty Advisory Group on Indirect Costs, Stanford University (1996 - 2000)
- Fellow, Geological Society of America (1996 - present)
- Member, Committee on the Arthur L. Day Medal, Geological Society of America (1997 - 1997)
- Invited Speaker, Univ. of California, Berkeley, Neville Cook Symposium, Oct. (1998 - 1998)
- Invited Speaker, Dept. of Geology and Geophysics, University of Edinburgh, Scotland, September (1999 - 1999)
- Invited Speaker, Anadarko (Houston), August (1999 - 1999)
- Invited Speaker, Norsk Hydro (Bergen, Norway), September (1999 - 1999)
- Member, School of Earth Sciences Computer Committee, Stanford University (1999 - 2009)
- Invited Speaker, Geological Society of America Annual Meeting, Hot Topics Session: Debate on Kinematics vs. Mechanics, Nov. (2000 - 2000)
- Invited Speaker, Chevron Petroleum Corp., San Ramon, Dec. (2000 - 2000)
- Invited Speaker, Repsol/YPF/Apex Corp., Denver, October; Shell, Amsterdam, Holland, September; Midland Valley Corp., Glasgow, Scotland, August; Dept. of Petroleum Engineering, Heriot-Watt University, Scotland, July ; Dept. of Geology and Geophysics, University of Edinburgh, Scotland, April & June (2000 - 2000)
- Member, Academic Council Committee on Libraries (C-LIB), Stanford University (2000 - 2002)
- Invited Keynote Speaker, Geological Society of London Conference: Mechanics of Jointing in the Crust, England, July (2001 - 2001)
- Member, GES Department, Undergraduate Program Committee, Stanford University (2001 - 2002)
- Graduate Student Coordinator, GES Department, Stanford University (2001 - 2004)
- Invited Speaker, Petroleum Engineering Department, Stanford University; Sandia National Laboratory, Albuquerque, New Mexico; California Institute of Technology, Seismological Laboratory, Pasadena, CA (2002 - 2002)
- Invited Speaker, U.S. Geological Survey, Menlo Park, CA; Frontiers of Geophysics, Geophysics Dept., Stanford University (2002 - 2002)
- Organizer & Chair, NSF Workshop on Structural Geology and Tectonics, Denver, CO (2002 - 2002)
- Chair, Academic Council Committee on Libraries (C-LIB), Stanford University (2002 - 2003)
- Co-opted Member, Academic Council Committee on Computing (C-ACIS), Stanford University (2002 - 2003)
- Chair, GES Department Search Committee on Surface Processes, Stanford University (2002 - 2004)
- Invited Speaker, Harvard University, Dept. of Earth & Planetary Sciences, Cambridge, MA; University of Massachusetts, Dept. of Geosciences, Amherst, MA ; Yale University, Dana Club Colloquium, Dept. of Geology & Geophysics, New Haven, CT; Princeton University, Dept. of Geosciences, Princeton, NJ (2003 - 2003)

- Invited Speaker, DOE Basic Energy Sciences Workshop on Compaction Localization, Washington, D.C.; DOE Geosciences Research Program Symposium: Flow and Transport from Pore to Reservoir Scales, Washington, D.C. (2004 - 2004)
- Invited Speaker, American Association of Petroleum Geologists Annual Meeting, Reservoir Deformation Research Group, Calgary, Canada. (2005 - 2005)
- Invited Speaker, Geological Society of America Annual Meeting, Pardee Symposium, Research opportunities, new frontiers, and the questioning of paradigms in structural geology and tectonics, Salt Lake City, Utah (2005 - 2005)
- Invited Speaker, ExxonMobil Upstream Research Lab, Workshop on Mechanics in Structural Geology, Houston TX (2005 - 2005)
- Member, Geophysics Search Committee on Computational Seismology/Imaging/Geodynamics (2005 - 2006)
- Invited Speaker, University of Texas, Department of Petroleum and Geosystems Engineering, Austin, TX (2006 - 2006)
- Invited Speaker, IGEOSS Symposium on Software Development for Industry, Montpellier, France (2006 - 2006)
- Session Organizer, Fracturing and Faulting During Folding of Sedimentary Strata, American Geophysical Union Annual Meeting, San Francisco, CA (2006 - 2006)
- Member, Introduction to the Humanities (IHUM) Governance Board, Stanford University (2006 - 2009)
- Invited Speaker, Conference on FEM in Reservoir Studies, ConocoPhillips, Houston, TX; IGEOSS Symposium on Software Development for Industry, Montpellier, France (2007 - 2007)
- Invited Speaker, Geological Society of America Annual Meeting, Bridging the Gap Between Kinematics and Mechanics, Denver, CO; Stanford University, Department of Energy Resources Engineering (2007 - 2007)
- Session Co-Organizer, Deformation of Sediment and Sedimentary Rock, American Geophysical Union Annual Meeting, San Francisco, CA (2007 - 2007)
- Member, School Search Committee for Computational Geosciences, Stanford University (2007 - 2008)
- Member, School Undergraduate Curriculum Committee, Stanford University (2007 - 2008)
- Alternate Representative, University Senate, Stanford University (2007 - 2009)
- Fellow, American Geophysical Union (2007 - present)
- Co-organizer, Geological Society of America Topical Session, Mathematical Models of Folding: Recent Advances, Applications and Future Directions, Houston, TX (2008 - 2008)
- Invited Speaker, U.S. Geological Survey, Earthquake Seminar Series, Earthquake Rupture Velocity and Shear Stress Drop, Menlo Park, CA (2008 - 2008)
- Invited Speaker, DOE-BES Conference, Basic Research Relevant to Geological CO2 Sequestration, Gaithersburg, MD (2008 - 2008)
- Invited Speaker, AAPG/SPE/SEG Hedberg Research Conference, The Geologic Occurrence and Hydraulic Significance of Fractures in Reservoirs, Casper, WY (2008 - 2008)
- Invited Speaker, U. C. Santa Cruz, Institute of Geophysics and Planetary Physics, Santa Cruz, CA (2008 - 2008)
- Invited Speaker, University of Washington, Earth and Space Sciences Department Seminar, Seattle, WA; University of Washington, Geophysics Seminar, Seattle, WA (2010 - 2010)
- Chair, GES Dept. Succession Committee, Stanford University (2012 - 2014)
- Graduate Student Coordinator, GES Dept., Stanford University (2012 - 2014)
- Director of Graduate Studies, GES Dept., Stanford University (2014 - 2015)

PROFESSIONAL EDUCATION

- Ph.D., Stanford University , Geology (1969)
- D.I.C., Imperial College, University of London , Geology (1969)
- B.A., Pomona College , Geology (1965)

LINKS

- Structural Geology and Rock Mechanics Site: <https://structuralgeology.stanford.edu>

Research & Scholarship

CURRENT RESEARCH AND SCHOLARLY INTERESTS

Research

My research aims to understand how faults and fractures initiate and evolve in Earth's brittle crust, how they affect the flow of molten rock, groundwater, and hydrocarbons, and the crucial role faults and fractures play in earthquake generation, folding of sedimentary strata, and volcanic eruption. We use quantitative field data and the principles of structural geology, combined with computer modeling based on continuum and fracture mechanics, to address fundamental questions about the processes of faulting, fracturing, and folding. Our understanding of the geologic structures created by these processes plays an important role in managing resource recovery and in the mitigation of natural hazards. To enhance the precision of our field data, we use the Global Positioning System (GPS) and Airborne Laser Swath Mapping (ALSM).

Professional Activities

Developer of Poly3D, a boundary element computer program to analyze faults and fractures; co-founder of IGEOSS, a French company developing software for the hydrocarbon industry; author and producer of *A Complete Suite*, a musical allegory exploring uses of continuum mechanics in structural geology; editor, *New Departures in Structural Geology and Tectonics*, an NSF-sponsored white paper on research opportunities; fellow of the Geological Society of America and of the American Geophysical Union

Publications

PUBLICATIONS

- **A modern scientific methodology for structural geology** *JOURNAL OF STRUCTURAL GEOLOGY*
Pollard, D. D., Pollard, S. R.
2025; 199
- **Using geologic structures to constrain constitutive laws not accessible in the laboratory** *JOURNAL OF STRUCTURAL GEOLOGY*
Nevitt, J. M., Warren, J. M., Kumamoto, K. M., Pollard, D. D.
2019; 125: 55–63
- **Fluid-filled fractures in Earth's lithosphere: Gravitational loading, interpenetration, and stable height of dikes and veins** *JOURNAL OF STRUCTURAL GEOLOGY*
Pollard, D. D., Townsend, M. R.
2018; 109: 38–54
- **Testing constitutive equations for brittle-ductile deformation associated with faulting in granitic rock** *JOURNAL OF GEOPHYSICAL RESEARCH-SOLID EARTH*
Nevitt, J. M., Warren, J. M., Pollard, D. D.
2017; 122 (8): 6269–93
- **Mechanical models for dikes: A third school of thought** *TECTONOPHYSICS*
Townsend, M. R., Pollard, D. D., Smith, R. P.
2017; 703: 98-118
- **Comparison of thermal modeling, microstructural analysis, and Ti-in-quartz thermobarometry to constrain the thermal history of a cooling pluton during deformation in the Mount Abbot Quadrangle, CA** *GEOCHEMISTRY GEOPHYSICS GEOSYSTEMS*
Nevitt, J. M., Warren, J. M., Kidder, S., Pollard, D. D.
2017; 18 (3): 1270-1297
- **Impacts of off-fault plasticity on fault slip and interaction at the base of the seismogenic zone** *GEOPHYSICAL RESEARCH LETTERS*
Nevitt, J. M., Pollard, D. D.
2017; 44 (4): 1714-1723

- **The mechanics of intersecting echelon veins and pressure solution seams in limestone** *JOURNAL OF STRUCTURAL GEOLOGY*
Seyum, S., Pollard, D. D.
2016; 89: 250-263
- **Incorporating fault mechanics into inversions of aftershock data for the regional remote stress, with application to the 1992 Landers, California earthquake** *TECTONOPHYSICS*
Maerten, F., Madden, E. H., Pollard, D. D., Maerten, L.
2016; 674: 52-64
- **Mechanism of formation of wiggly compaction bands in porous sandstone: 2. Numerical simulation using discrete element method** *JOURNAL OF GEOPHYSICAL RESEARCH-SOLID EARTH*
Liu, C., Pollard, D. D., Gu, K., Shi, B.
2015; 120 (12): 8153-8168
- **Mechanism of formation of wiggly compaction bands in porous sandstone: 1. Observations and conceptual model** *JOURNAL OF GEOPHYSICAL RESEARCH-SOLID EARTH*
Liu, C., Pollard, D. D., Deng, S., Aydin, A.
2015; 120 (12): 8138-8152
- **Jointing around magmatic dikes as a precursor to the development of volcanic plugs** *BULLETIN OF VOLCANOLOGY*
Townsend, M., Pollard, D. D., Johnson, K., Culha, C.
2015; 77 (10)
- **The influence of fault geometry on small strike-slip fault mechanics** *JOURNAL OF STRUCTURAL GEOLOGY*
Ritz, E., Pollard, D. D., Ferris, M.
2015; 73: 49-63
- **iBem3D, a three-dimensional iterative boundary element method using angular dislocations for modeling geologic structures** *COMPUTERS & GEOSCIENCES*
Maerten, F., Maerten, L., Pollard, D. D.
2014; 72: 1-17
- **Eshelby's solution for ellipsoidal inhomogeneous inclusions with applications to compaction bands** *JOURNAL OF STRUCTURAL GEOLOGY*
Meng, C., Pollard, D. D.
2014; 67: 1-19
- **Evaluation of transtension and transpression within contractional fault steps: Comparing kinematic and mechanical models to field data** *JOURNAL OF STRUCTURAL GEOLOGY*
Nevitt, J. M., Pollard, D. D., Warren, J. M.
2014; 60: 55-69
- **Geometry of crustal faults: Identification from seismicity and implications for slip and stress transfer models** *JOURNAL OF GEOPHYSICAL RESEARCH-SOLID EARTH*
Kaven, J. O., Pollard, D. D.
2013; 118 (9): 5058-5070
- **Mechanics of nonplanar faults at extensional steps with application to the 1992 M 7.3 Landers, California, earthquake** *JOURNAL OF GEOPHYSICAL RESEARCH-SOLID EARTH*
Madden, E. H., Maerten, F., Pollard, D. D.
2013; 118 (6): 3249-3263
- **Analytical solutions and numerical tests of elastic and failure behaviors of close-packed lattice for brittle rocks and crystals** *JOURNAL OF GEOPHYSICAL RESEARCH-SOLID EARTH*
Liu, C., Pollard, D. D., Shi, B.
2013; 118 (1): 71-82
- **Modeling mixed-mode fracture propagation in isotropic elastic three dimensional solid** *INTERNATIONAL JOURNAL OF FRACTURE*
Meng, C., Maerten, F., Pollard, D. D.
2013; 179 (1-2): 45-57

- **Integrating complementarity into the 2D displacement discontinuity boundary element method to model faults and fractures with frictional contact properties** *COMPUTERS & GEOSCIENCES*
Ritz, E., Mutlu, O., Pollard, D. D.
2012; 45: 304-312
- **Pitfalls among the promises of mechanics-based restoration: Addressing implications of unphysical boundary conditions** *JOURNAL OF STRUCTURAL GEOLOGY*
Lovely, P., Flodin, E., Guzowski, C., Maerten, F., Pollard, D. D.
2012; 41: 47-63
- **Reverse drag revisited: Why footwall deformation may be the key to inferring listric fault geometry** *JOURNAL OF STRUCTURAL GEOLOGY*
Resor, P. G., Pollard, D. D.
2012; 41: 98-109
- **Stick, slip, and opening of wavy frictional faults: A numerical approach in two dimensions** *JOURNAL OF GEOPHYSICAL RESEARCH-SOLID EARTH*
Ritz, E., Pollard, D. D.
2012; 117
- **Evaluation of the Eshelby solution for the ellipsoidal inclusion and heterogeneity** *COMPUTERS & GEOSCIENCES*
Meng, C., Heltsley, W., Pollard, D. D.
2012; 40: 40-48
- **Integration of Surface Slip and Aftershocks to Constrain the 3D Structure of Faults Involved in the M 7.3 Landers Earthquake, Southern California** *BULLETIN OF THE SEISMOLOGICAL SOCIETY OF AMERICA*
Madden, E. H., Pollard, D. D.
2012; 102 (1): 321-342
- **Off-fault tensile cracks: A link between geological fault observations, lab experiments, and dynamic rupture models** *JOURNAL OF GEOPHYSICAL RESEARCH-SOLID EARTH*
Ngo, D., Huang, Y., Rosakis, A., Griffith, W. A., Pollard, D.
2012; 117
- **Mechanical analysis of fault slip data: Implications for paleostress analysis** *JOURNAL OF STRUCTURAL GEOLOGY*
Kaven, J. O., Maerten, F., Pollard, D. D.
2011; 33 (2): 78-91
- **Closure of circular arc cracks under general loading: effects on stress intensity factors** *INTERNATIONAL JOURNAL OF FRACTURE*
Ritz, E., Pollard, D. D.
2011; 167 (1): 3-14
- **Fold geometry at Sheep Mountain anticline, Wyoming, constructed using airborne laser swath mapping data, outcrop-scale geologic mapping, and numerical interpolation** *JOURNAL OF GEOPHYSICAL RESEARCH-SOLID EARTH*
Lovely, P., Zahasky, C., Pollard, D. D.
2010; 115
- **Fissure formation and subsurface subsidence in a coalbed fire** *INTERNATIONAL JOURNAL OF ROCK MECHANICS AND MINING SCIENCES*
Ide, T. S., Pollard, D., Orr, F. M.
2010; 47 (1): 81-93
- **Structural geometry of Raplee Ridge monocline and thrust fault imaged using inverse Boundary Element Modeling and ALSM data** *JOURNAL OF STRUCTURAL GEOLOGY*
Hilley, G. E., Mynatt, I., Pollard, D. D.
2010; 32 (1): 45-58
- **Influence of Outcrop Scale Fractures on the Effective Stiffness of Fault Damage Zone Rocks** *PURE AND APPLIED GEOPHYSICS*
Griffith, W. A., Sanz, P. F., Pollard, D. D.
2009; 166 (10-11): 1595-1627
- **Fracture initiation, development, and reactivation in folded sedimentary rocks at Raplee Ridge, UT** *JOURNAL OF STRUCTURAL GEOLOGY*
Mynatt, I., Seyum, S., Pollard, D. D.

2009; 31 (10): 1100-1113

- **Dynamic rupture experiments elucidate tensile crack development during propagating earthquake ruptures** *GEOLOGY*
Griffith, W. A., Rosakis, A., Pollard, D. D., Ko, C. W.
2009; 37 (9): 795-798
- **Regions of Reduced Static Stress Drop near Fault Tips for Large Strike-Slip Earthquakes** *BULLETIN OF THE SEISMOLOGICAL SOCIETY OF AMERICA*
Lovely, P. J., Pollard, D. D., Mutlu, O.
2009; 99 (3): 1691-1704
- **Static stress drop associated with brittle slip events on exhumed faults** *JOURNAL OF GEOPHYSICAL RESEARCH-SOLID EARTH*
Griffith, W. A., Di Toro, G., Pennacchioni, G., Pollard, D. D., Nielsen, S.
2009; 114
- **Constraining Surface Interpolations Using Elastic Plate Bending Solutions with Applications to Geologic Folding** *MATHEMATICAL GEOSCIENCES*
Kaven, J. O., Mazzeo, R., Pollard, D. D.
2009; 41 (1): 1-14
- **On the patterns of wing cracks along an outcrop scale flaw: A numerical modeling approach using complementarity** *JOURNAL OF GEOPHYSICAL RESEARCH-SOLID EARTH*
Mutlu, O., Pollard, D. D.
2008; 113 (B6)
- **Fracture permeability created by perturbed stress fields around active faults in a fractured basement reservoir** *AAPG BULLETIN*
Tamagawa, T., Pollard, D. D.
2008; 92 (6): 743-764
- **Mechanical models of fracture reactivation and slip on bedding surfaces during folding of the asymmetric anticline at Sheep Mountain, Wyoming** *JOURNAL OF STRUCTURAL GEOLOGY*
Sanz, P. F., Pollard, D. D., Allwardt, P. F., Borja, R. I.
2008; 30 (9): 1177-1191
- **Thin pseudotachylytes in faults of the Mt. Abbot quadrangle, Sierra Nevada: Physical constraints for small seismic slip events** *JOURNAL OF STRUCTURAL GEOLOGY*
Griffith, W. A., Di Toro, G., Pennacchioni, G., Pollard, D. D.
2008; 30 (9): 1086-1094
- **Curvature and fracturing based on global positioning system data collected at Sheep Mountain anticline, Wyoming** *GEOSPHERE*
Allwardt, P. F., Bellahsen, N., Pollard, D. D.
2007; 3 (6): 408-421
- **Inferring fault characteristics using fold geometry constrained by airborne laser swath mapping at Raplee Ridge, Utah** *GEOPHYSICAL RESEARCH LETTERS*
Mynatt, I., Hilley, G. E., Pollard, D. D.
2007; 34 (16)
- **Mechanical aspects of thrust faulting driven by far-field compression and their implications for fold geometry** *ACTA GEOTECHNICA*
Sanz, P. F., Borja, R. I., Pollard, D. D.
2007; 2 (1): 17-31
- **Mechanical and stratigraphic constraints on the evolution of faulting at Elk Hills, California** *AAPG BULLETIN*
Fiore, P. E., Pollard, D. D., Currin, W. R., Miner, D. M.
2007; 91 (3): 321-341
- **Using differential geometry to describe 3-D folds** *JOURNAL OF STRUCTURAL GEOLOGY*
Mynatt, I., Bergbauer, S., Pollard, D. D.
2007; 29 (7): 1256-1266
- **Characterization of strike-slip fault - Splay relationships in sandstone** *JOURNAL OF STRUCTURAL GEOLOGY*

- de Jossineau, G., Mutlu, O., Aydin, A., Pollard, D. D.
2007; 29 (11): 1831-1842
- **Flow and transport effects of compaction bands in sandstone at scales relevant to aquifer and reservoir management** *WATER RESOURCES RESEARCH*
Sternlof, K. R., Karimi-Fard, M., Pollard, D. D., Durlofsky, L. J.
2006; 42 (7)
 - **From spatial variation of fracture patterns to fold kinematics: A geomechanical approach** *GEOPHYSICAL RESEARCH LETTERS*
Bellahsen, N., Fiore, P. E., Pollard, D. D.
2006; 33 (2)
 - **The role of fractures in the structural interpretation of Sheep Mountain Anticline, Wyoming** *JOURNAL OF STRUCTURAL GEOLOGY*
Bellahsen, N., Fiore, P., Pollard, D. D.
2006; 28 (5): 850-867
 - **A complementarity approach for modeling fractures** *41st U.S. Symposium on Rock Mechanics, "50 years of Rock Mechanics-Landmarks and Future Challenges"*
Mutlu, O., Pollard, D. D.
edited by Yale, D., Holtz, S., Breeds, C., Ozbay, U.
2006: 9 Pages
 - **Anticrack inclusion model for compaction bands in sandstone** *JOURNAL OF GEOPHYSICAL RESEARCH-SOLID EARTH*
Sternlof, K. R., Rudnicki, J. W., Pollard, D. D.
2005; 110 (B11)
 - **Inverting for slip on three-dimensional fault surfaces using angular dislocations** *BULLETIN OF THE SEISMOLOGICAL SOCIETY OF AMERICA*
Maerten, F., Resor, P., Pollard, D., Maerten, L.
2005; 95 (5): 1654-1665
 - **Integrating high-precision aftershock locations and geodetic observations to model coseismic deformation associated with the 1995 Kozani-Grevena earthquake, Greece** *JOURNAL OF GEOPHYSICAL RESEARCH-SOLID EARTH*
Resor, P. G., Pollard, D. D., Wright, T. J., Beroza, G. C.
2005; 110 (B9)
 - **Fundamentals of Structural Geology**
Pollard, D. D., Fletcher, R. C.
Cambridge University Press, New York.2005
 - **Permeability effects of deformation band arrays in sandstone** *AAPG BULLETIN*
Sternlof, K. R., Chapin, J. R., Pollard, D. D., Durlofsky, L. J.
2004; 88 (9): 1315-1329
 - **Paleo-fluid flow and deformation in the Aztec Sandstone at the Valley of Fire, Nevada - Evidence for the coupling of hydrogeologic, diagenetic, and tectonic processes** *GEOLOGICAL SOCIETY OF AMERICA BULLETIN*
Eichhubl, P., Taylor, W. L., Pollard, D. D., Aydin, A.
2004; 116 (9-10): 1120-1136
 - **A new conceptual fold-fracture model including pre-folding joints, based on the Emigrant Gap anticline, Wyoming** *GEOLOGICAL SOCIETY OF AMERICA BULLETIN*
Bergbauer, S., Pollard, D. D.
2004; 116 (3-4): 294-307
 - **Effective permeability in sandstone containing deformation band arrays** *American Association of Petroleum Geologists Bulletin*
Sterlof, K., Chapin, J., Pollard, D. D., Durlofsky, L. J.
2004; 88: 1315-1329
 - **Using differential geometry to characterize and analyze the morphology of joints** *The Initiation, Propagation, and Arrest of Joints and Other Fractures*
Pollard, D. D., Bergbauer, S., Mynatt, I.

edited by Cosgrove, J. W., Engelder, T.
Geological Society of London.2004: 153–182

- **How to calculate normal curvatures of sampled geological surfaces** *JOURNAL OF STRUCTURAL GEOLOGY*
Bergbauer, S., Pollard, D. D.
2003; 25 (2): 277-289
- **Imaging 3-D fracture networks around boreholes** *AAPG BULLETIN*
Wu, H. Q., Pollard, D. D.
2002; 86 (4): 593-604
- **Effects of local stress perturbation on secondary fault development** *JOURNAL OF STRUCTURAL GEOLOGY*
Maerten, L., Gillespie, P., Pollard, D. D.
2002; 24 (1): 145-153
- **Considering the third dimension in stress-triggering of aftershocks: 1993 Klamath Falls, Oregon, earthquake sequence** *GEOPHYSICAL RESEARCH LETTERS*
Crider, J. G., Schaff, D. P., Pollard, D. D., Beroza, G. C.
2001; 28 (14): 2739-2742
- **Integrating 3-D seismic data, field analogs, and mechanical models in the analysis of segmented normal faults in the Wytch Farm oil field, southern England, United Kingdom** *AAPG BULLETIN*
Kattenhorn, S. A., Pollard, D. D.
2001; 85 (7): 1183-1210
- **Digital mapping of three-dimensional structures of the Chimney Rock fault system, central Utah** *JOURNAL OF STRUCTURAL GEOLOGY*
Maerten, L., Pollard, D. D., Maerten, F.
2001; 23 (4): 585-592
- **Getting more for less: The unusual efficiency of fluid flow in fractures** *GEOPHYSICAL RESEARCH LETTERS*
Bai, T. X., Pollard, D. D.
2001; 28 (1): 65-68
- **Closely spaced fractures in layered rocks: initiation mechanism and propagation kinematics** *JOURNAL OF STRUCTURAL GEOLOGY*
Bai, T. X., Pollard, D. D.
2000; 22 (10): 1409-1425
- **How to constrain 3-D fault continuity and linkage using reflection seismic data: A geomechanical approach** *AAPG BULLETIN*
Maerten, L., Pollard, D. D., Karpuz, R.
2000; 84 (9): 1311-1324
- **Strain and stress: Discussion** *JOURNAL OF STRUCTURAL GEOLOGY*
Pollard, D. D.
2000; 22 (9): 1359-1367
- **Estimation of in situ permeability of deformation bands in porous sandstone, Valley of Fire, Nevada** *WATER RESOURCES RESEARCH*
Taylor, W. L., Pollard, D. D.
2000; 36 (9): 2595-2606
- **Spacing of edge fractures in layered materials** *INTERNATIONAL JOURNAL OF FRACTURE*
Bai, T. X., Pollard, D. D., Gao, H. J.
2000; 103 (4): 373-395
- **Explanation for fracture spacing in layered materials** *NATURE*
Bai, T., Pollard, D. D., Gao, H.
2000; 403 (6771): 753-756
- **Mechanical prediction of fracture aperture in layered rocks** *JOURNAL OF GEOPHYSICAL RESEARCH-SOLID EARTH*
Bai, T. X., Pollard, D. D., Gross, M. R.
2000; 105 (B1): 707-721

- **Joints at high angles to normal fault strike: an explanation using 3-D numerical models of fault-perturbed stress fields** *JOURNAL OF STRUCTURAL GEOLOGY*
Kattenhorn, S. A., Aydin, A., Pollard, D. D.
2000; 22 (1): 1-23
- **Normal fault growth: evolution of tipline shapes and slip distribution** *Aspects of Tectonic Faulting*
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