

Stanford



Dennis Bird

Professor of Geological Sciences, Emeritus
Earth & Planetary Sciences

Bio

ACADEMIC APPOINTMENTS

- Emeritus Faculty, Acad Council, Earth & Planetary Sciences
- Affiliate, Precourt Institute for Energy

ADMINISTRATIVE APPOINTMENTS

- Surveyor, U.S. Forest Service, (1968-1971)
- Field Geologist, Denver, U.S. Geological Survey, (1972-1972)
- Postdoctoral Research Fellow, Department of Geosciences, University of Arizona, (1978-1980)
- Lecturer, Department of Geosciences, University of Arizona, (1980-1981)
- Research Associate, Department of Geosciences, University of Arizona, (1981-1982)
- Assistant Professor of Geology, Stanford University, (1982-1989)
- Associate Professor of Geology, Stanford University, (1989-1993)
- Associate Professor of Geological & Environmental Sciences, Stanford University, (1993-1998)
- Professor of Geological & Environmental Sciences, Stanford University, (1998- present)

HONORS AND AWARDS

- Arthur L. Coggins Research Fellow, Department of Civil Engineering, University of California, Berkeley (1974)
- Grant-in-Aid Recipient, American Association of Petroleum Geologists (1974)
- School of Earth Sciences Teaching Award, Stanford University (1990)
- Fellow, Mineralogical Society of America (2001)

BOARDS, ADVISORY COMMITTEES, PROFESSIONAL ORGANIZATIONS

- Member, School and Earth Sciences Geobiology search Committee, Stanford University (2011 - 2012)
- Member, I-Earth Committee, Stanford University (2008 - 2010)
- Member, Writing and Rhetoric Governance Board, Stanford University (2006 - 2012)
- Member, Graduate Admissions Committee (GES), Stanford University (2004 - 2007)
- Undergraduate Program Director (GES), Stanford University (2002 - 2012)
- Fellow, Mineralogical Society of America (2001 - 2001)
- Member, Undergraduate Planning Committee, Stanford University (2000 - 2001)
- Member, Graduate Admissions Committee, Stanford University (1996 - 2000)

- Member, Geohistory and Geology display Committee for Geology Corner, Stanford University (1995 - 1996)
- Member, Mudd, Gamble Ore Deposits Fund Committee, Stanford University (1994 - 2000)
- Member, Howard Fund committee, Stanford University (1994 - 2000)
- Member, Lawton and Jenkins Fund Committee, Stanford University (1994 - 2000)
- Member, GES 1 (Planet Earth) Committee, Stanford University (1994 - 2001)
- Chairman, G&ES Undergraduate Committee, Stanford University (1994 - 1999)
- Co-Chair, G&ES Undergraduate Affairs, Stanford University (1993 - 2000)
- Faculty advisor, Stanford Outdoor Education Program, Stanford University (1992 - 2014)
- Member, Advisory Board, Stanford Center of Teaching and Learning, Stanford University (1988 - 2001)
- Associate editor, American Journal Science (1987 - present)
- Chairman, G&ES Shell Foundation Fund Committee, Stanford University (1986 - 1996)
- Member, Writing and Rhetoric Requirement Governance Board, Stanford University (2014 - present)

PROFESSIONAL EDUCATION

- Ph.D., University of California, Berkeley , Geology (1978)
- M.S., University of California, Riverside , Geology (1975)
- B.S., University of California, Riverside , Geology (1971)

Research & Scholarship

CURRENT RESEARCH AND SCHOLARLY INTERESTS

Research

My students and I study chemical and physical processes related to water-rock reaction in Earth's crust, and the geologic consequences of life's metabolic processes. As theoretical geochemists, we investigate the properties of solution-mineral reactions to predict the nature of elemental mass transfer by reactive fluids in weathering, diagenetic, hydrothermal, and metamorphic environments. Recent efforts focus on the environmental geochemistry of chromium and arsenic, CO₂ sequestration in large igneous provinces, paleoclimate proxies preserved in weathered basaltic tephros of the North Atlantic Igneous Province, and exhumation rates of ultra-high pressure metamorphic rocks of China. Our geobiology efforts focus on the geologic consequences of the photosynthesis on early Earth, specifically processes leading to the rise of continents, and in historic times, the effects of synpandemic fire suppression and reforestation in tropical Americas on atmospheric CO₂ during European conquest.

Teaching

I teach courses for graduate and undergraduate students on the geochemical thermodynamics of water-rock reactions relevant to understanding transport of elements of environmental concern, and to understanding diagenetic, hydrothermal, metamorphic, and igneous processes in Earth's crust. I teach a lower division undergraduate seminar on the geologic background and environmental impact of the California Gold Rush, a class that satisfies the university second year Writing and Rhetoric Requirement (WRR2), and I co-teach the Senior Seminar in GES, which satisfies the Writing in the Major requirement (WIM) for our undergraduates. For the past 22 years I have been the faculty advisor for Stanford's Outdoor Education Program (OEP), a group of student instructors who teach the Wilderness Skills Class in GES (GES 7A[Fall], 7B[Winter], and 7C[Spring])

Professional Activities

Associate editor, American Journal Science (1987-present); fellow, Mineralogical Society of America (2001); School of Earth Sciences Teaching Award (1990); GES Undergraduate Program Director (2002-2012); member, Stanford University Writing and Rhetoric Governance Board (2006-2012); member, GES Graduate Admissions Committee (2005-06)

Publications

PUBLICATIONS

- **Geochemistry of CO₂-rich waters in Iceland** *CHEMICAL GEOLOGY*
Thomas, D. L., Bird, D. K., Arnorsson, S., Maher, K.
2016; 444: 158-179
- **Clumped-isotope thermometry of magnesium carbonates in ultramafic rocks** *GEOCHIMICA ET COSMOCHIMICA ACTA*
del Real, P. G., Maher, K., Kluge, T., Bird, D. K., Brown, G. E., John, C. M.
2016; 193: 222-250
- **Aluminous gneiss derived by weathering of basaltic source rocks in the Neoproterozoic Storö Supracrustal Belt, southern West Greenland** *CHEMICAL GEOLOGY*
Szilas, K., Maher, K., Bird, D. K.
2016; 441: 63-80
- **Hydrogeology of the Krafla geothermal system, northeast Iceland** *GEOFLUIDS*
Pope, E. C., Bird, D. K., Arnorsson, S., Giroud, N.
2016; 16 (1): 175-197
- **A spatially resolved surface kinetic model for forsterite dissolution** *GEOCHIMICA ET COSMOCHIMICA ACTA*
Maher, K., Johnson, N. C., Jackson, A., Lammers, L. N., Torchinsky, A. B., Weaver, K. L., Bird, D. K., Brown, G. E.
2016; 174: 313-334
- **Sedimentary reservoir oxidation during geologic CO₂ sequestration** *GEOCHIMICA ET COSMOCHIMICA ACTA*
Lammers, L. N., Brown, G. E., Bird, D. K., Thomas, R. B., Johnson, N. C., Rosenbauer, R. J., Maher, K.
2015; 155: 30-46
- **Sedimentary reservoir oxidation during geologic CO₂ sequestration** *GEOCHIMICA ET COSMOCHIMICA ACTA*
Lammers, L. N., Brown, Jr., G. E., Bird, D. K., Thomas, R. B., Johnson, N. C., Rosenbauer, R. J., Maher, K.
2015; 155: 30-46
- **Olivine dissolution and carbonation under conditions relevant for in situ carbon storage** *CHEMICAL GEOLOGY*
Johnson, N. C., Thomas, B., Maher, K., Rosenbauer, R. J., Bird, D., Brown, G. E.
2014; 373: 93-105
- **Stable isotopes of hydrothermal minerals as tracers for geothermal fluids in Iceland** *GEO THERMICS*
Pope, E. C., Bird, D. K., Arnorsson, S.
2014; 49: 99-110
- **BIOLOGICAL EFFECTS ON THE SOURCE OF GEONEUTRINOS** *INTERNATIONAL JOURNAL OF MODERN PHYSICS A*
Sleep, N. H., Bird, D. K., Rosing, M. T.
2013; 28 (30)
- **KARRAT ISFJORD: A NEWLY DISCOVERED PALEOPROTEROZOIC CARBONATITE-SOURCED REF DEPOSIT, CENTRAL WEST GREENLAND** *ECONOMIC GEOLOGY*
Mott, A. V., Bird, D. K., Grove, M., Rose, N., Bernstein, S., Mackay, H., Krebs, J.
2013; 108 (6): 1471-1488
- **Evolution of low-O-18 Icelandic crust** *EARTH AND PLANETARY SCIENCE LETTERS*
Pope, E. C., Bird, D. K., Arnorsson, S.
2013; 374: 47-59
- **Composition and origin of rhyolite melt intersected by drilling in the Krafla geothermal field, Iceland** *CONTRIBUTIONS TO MINERALOGY AND PETROLOGY*

Zierenberg, R. A., Schiffman, P., Barfod, G. H., Leshner, C. E., Marks, N. E., Lowenstern, J. B., Mortensen, A. K., Pope, E. C., Bird, D. K., Reed, M. H., Frioleifsson, G. O., Elders, W. A.
2013; 165 (2): 327-347

- **Stable Isotopes of Hydrothermal Minerals as Tracers for Geothermal Fluids in Iceland** *Geothermics*
Pope, E. C., Bird, D. K., Arnorsson, S.
2013
- **Isotope composition and volume of Earth's early oceans** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*
Pope, E. C., Bird, D. K., Rosing, M. T.
2012; 109 (12): 4371-4376
- **Paleontology of Earth's Mantle** *ANNUAL REVIEW OF EARTH AND PLANETARY SCIENCES, VOL 40*
Sleep, N. H., Bird, D. K., Pope, E.
2012; 40: 277-300
- **Serpentinite and the dawn of life** *PHILOSOPHICAL TRANSACTIONS OF THE ROYAL SOCIETY B-BIOLOGICAL SCIENCES*
Sleep, N. H., Bird, D. K., Pope, E. C.
2011; 366 (1580): 2857-2869
- **Neotropical human-landscape interactions, fire, and atmospheric CO₂ during European conquest** *HOLOCENE*
Nevle, R. J., Bird, D. K., Ruddiman, W. F., Dull, R. A.
2011; 21 (5): 853-864
- **Origin of a rhyolite that intruded a geothermal well while drilling at the Krafla volcano, Iceland** *GEOLOGY*
Elders, W. A., Frioleifsson, G. O., Zierenberg, R. A., Pope, E. C., Mortensen, A. K., Guomundsson, A., Lowenstern, J. B., Marks, N. E., Owens, L., Bird, D. K., Reed, M., Olsen, N. J., Schiffman, et al
2011; 39 (3): 231-234
- **No climate paradox under the faint early Sun** *NATURE*
Rosing, M. T., Bird, D. K., Sleep, N. H., Bjerrum, C. J.
2010; 464 (7289): 744-U117
- **The Columbian Encounter and the Little Ice Age: Abrupt Land Use Change, Fire, and Greenhouse Forcing** *ANNALS OF THE ASSOCIATION OF AMERICAN GEOGRAPHERS*
Dull, R. A., Nevle, R. J., Woods, W. I., Bird, D. K., Avnery, S., Denevan, W. M.
2010; 100 (4): 755-771
- **Iceland Deep Drilling Project (IDDP): Stable isotope evidence of fluid evolution in Icelandic Geothermal Systems** *Proceeding World Geothermal Congress*
Pope, E. C., Bird, D. K., Arnorsson, S., Fridriksson, T., Elders, W. A., Fridleifsson, G. O.
2010: 25-29
- **Iceland Deep Drilling Project (IDDP): Arsenic distribution and mobility in active and fossil geothermal systems in Iceland** *Proceeding World Geothermal Congress*
Olsen, N. J., Bird, D. K., Arnorsson, S., Fridriksson, T., Fridleifsson, G. O., Elders, W. A.
2010: 25-29
- **Iceland Deep Drilling Project (IDDP): Hydrothermal minerals record CO₂ partial pressures in the Reykjanes Geothermal System, Iceland** *Proceeding World Geothermal Congress*
Freedman, A. E., Bird, D. K., Arnorsson, S., Fridriksson, T., Elders, W. A., Fridleifsson, G. O.
2010
- **Geochemical Evolution of a High Arsenic, Alkaline Pit-Lake in the Mother Lode Gold District, California** *ECONOMIC GEOLOGY*
Savage, K. S., Ashley, R. P., Bird, D. K.
2009; 104 (8): 1171-1211
- **Processes controlling Sr in surface and ground waters of Tertiary tholeiitic flood basalts in Northern Iceland** *GEOCHIMICA ET COSMOCHIMICA ACTA*
Fridriksson, T., Arnorsson, S., Bird, D. K.
2009; 73 (22): 6727-6746

- **HYDROTHERMAL MINERALS RECORD CO₂ PARTIAL PRESSURES IN THE REYKJANES GEOTHERMAL SYSTEM, ICELAND** *AMERICAN JOURNAL OF SCIENCE*
Freedman, A. J., Bird, D. K., Arnorsson, S., Fridriksson, T., Elders, W. A., Fridleifsson, G. O.
2009; 309 (9): 788-833
- **Isotopic constraints on ice age fluids in active geothermal systems: Reykjanes, Iceland** *GEOCHIMICA ET COSMOCHIMICA ACTA*
Pope, E. C., Bird, D. K., Arnorsson, S., Fridriksson, T., Elders, W. A., Fridleifsson, G. O.
2009; 73 (15): 4468-4488
- **Paragneiss zircon geochronology and trace element geochemistry, North Qaidam HP/UHP terrane, western China** *8th International Eclogite Conference*
Mattinson, C. G., Wooden, J. L., Zhang, J. X., Bird, D. K.
PERGAMON-ELSEVIER SCIENCE LTD.2009: 298-309
- **Peptide Synthesis in Early Earth Hydrothermal Systems** *ASTROBIOLOGY*
Lemke, K. H., Rosenbauer, R. J., Bird, D. K.
2009; 9 (2): 141-146
- **The Iceland Deep Drilling Project: Stable isotope constraints of fluid source and evolution in Icelandic geothermal systems** *Proceeding Geothermal Resources Council*
Pope, E. C., Bird, D. K., Arnorsson, C., Fridriksson, T., Elders, W. A., Fridleifsson, G. O.
2009
- **Evolutionary ecology during the rise of dioxygen in the Earth's atmosphere** *PHILOSOPHICAL TRANSACTIONS OF THE ROYAL SOCIETY B-BIOLOGICAL SCIENCES*
Sleep, N. H., Bird, D. K.
2008; 363 (1504): 2651-2664
- **An hydrothermal experimental study of the cobalt-cobalt oxide redox buffer** *CHEMICAL GEOLOGY*
Lemke, K. H., Rosenbauer, R. J., Bischoff, J. L., Bird, D. K.
2008; 252 (3-4): 136-144
- **Effects of syn-pandemic fire reduction and reforestation in the tropical Americas on atmospheric CO₂ during European conquest** *PALAEOGEOGRAPHY PALAEOCLIMATOLOGY PALAEOECOLOGY*
Nevle, R. J., Bird, D. K.
2008; 264 (1-2): 25-38
- **Chronology of gold mineralization in the Sierra Nevada Foothills from Ar-40/Ar-39 dating of Mariposite** *INTERNATIONAL GEOLOGY REVIEW*
Snow, C. A., Bird, D. K., Metcalf, J., McWilliams, M.
2008; 50 (6): 503-518
- **High- and ultrahigh-pressure metamorphism in the North Qaidam and South Altyn Terranes, western China** *INTERNATIONAL GEOLOGY REVIEW*
Mattinson, C. G., Menold, C. A., ZANG, J. X., Bird, D. K.
2007; 49 (11): 969-995
- **Niches of the pre-photosynthetic biosphere and geologic preservation of Earth's earliest ecology** *GEOBIOLOGY*
Sleep, N. H., Bird, D. K.
2007; 5 (2): 101-117
- **Genesis of hexavalent chromium from natural sources in soil and groundwater** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*
Oze, C., Bird, D. K., Fendorf, S.
2007; 104 (16): 6544-6549
- **Placer diamonds in unconsolidated sands of the Cretaceous Atane Fm, Disko Island, West Greenland** *Report of the Geological Survey of Denmark and Greenland*
Bernstein, S., Knudsen, C., Bird, D. K., Bruun, M.
2007; 2007/13: 1-62
- **Niches of the pre-photosynthetic biosphere and geologic preservation of Earth's earliest ecology** *Geobiology*
Bernstein, S., Knudsen, C., Bird, D. K., Bruun, M.

2007; 5 (2): 101-117

- **A tribute to Charles Kent Brooks** *LITHOS*
Tegner, C., Bernstein, S., Bird, D. K.
2006; 92 (1-2): VII-XI
- **Regional very low-grade metamorphism of basaltic lavas, Disko-Nuussuaq region, West Greenland** *Symposium in Honor of Charles Kent Brooks*
Neuhoff, P. S., Rogers, K. L., Stannius, L. S., Bird, D. K., Pedersen, A. K.
ELSEVIER SCIENCE BV.2006: 33–54
- **CO₂ metasomatism in a basalt-hosted petroleum reservoir, Nuussuaq, West Greenland** *Symposium in Honor of Charles Kent Brooks*
Rogers, K. L., Neuhoff, P. S., Pedersen, A. K., Bird, D. K.
ELSEVIER SCIENCE BV.2006: 55–82
- **Age and duration of eclogite-facies metamorphism, North Qaidam HP/UHP terrane, western China** *AMERICAN JOURNAL OF SCIENCE*
Mattinson, C. G., Wooden, J. L., Liou, J. G., Bird, D. K., Wu, C. L.
2006; 306 (9): 683-711
- **Geochronology and tectonic significance of Middle Proterozoic granitic orthogneiss, North Qaidam HP/UHP terrane, Western China** *7th International Eclogite Conference*
Mattinson, C. G., Wooden, J. L., Liou, J. G., Bird, D. K., Wu, C. L.
SPRINGER WIEN.2006: 227–41
- **The rise of continents - An essay on the geologic consequences of photosynthesis** *PALAEOGEOGRAPHY PALAEOCLIMATOLOGY PALAEOECOLOGY*
Rosing, M. T., Bird, D. K., Sleep, N. H., Glassley, W., Albarede, F.
2006; 232 (2-4): 99-113
- **Arsenic speciation in synthetic jarosite** *Annual Meeting of the Geological-Society-of-America*
Savage, K. S., Bird, D. K., O'Day, P. A.
ELSEVIER SCIENCE BV.2005: 473–98
- **H-2-rich fluids from serpentinization: Geochemical and biotic implications** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*
Sleep, N. H., Meibom, A., Fridriksson, T., Coleman, R. G., Bird, D. K.
2004; 101 (35): 12818-12823
- **A lower limit for atmospheric carbon dioxide levels 3.2 billion years ago** *NATURE*
Hessler, A. M., Lowe, D. R., Jones, R. L., Bird, D. K.
2004; 428 (6984): 736-738
- **Experimental determination of thermodynamic properties of ion-exchange in heulandite: Binary ion-exchange experiments at 55 and 85 degrees C involving Ca²⁺, Sr²⁺, Na⁺, and K⁺** *AMERICAN JOURNAL OF SCIENCE*
Fridriksson, T., Neuhoff, P. S., Viani, B. E., Bird, D. K.
2004; 304 (4): 287-332
- **Chromium geochemistry of serpentine soils** *INTERNATIONAL GEOLOGY REVIEW*
Oze, C., Fendorf, S., Bird, D. K., Coleman, R. G.
2004; 46 (2): 97-126
- **Chromium geochemistry in serpentinized ultramafic rocks and serpentine soils from the Franciscan Complex of California** *AMERICAN JOURNAL OF SCIENCE*
Oze, C., Fendorf, S., Bird, D. K., Coleman, R. G.
2004; 304 (1): 67-101
- **Epidote in geothermal systems** *EPIDOTES*
Bird, D. K., Spieler, A. R.
2004; 56: 235-300
- **Hydrogen-bonded water in laumontite II: Experimental determination of site-specific thermodynamic properties of hydration of the W1 and W5 sites** *AMERICAN MINERALOGIST*
Fridriksson, T., Carey, J. W., Bish, D. L., Neuhoff, P. S., Bird, D. K.

2003; 88 (7): 1060-1072

- **Hydrogen-bonded water in laumontite I: X-ray powder diffraction study of water site occupancy and structural changes in laumontite during room-temperature isothermal hydration/dehydration** *AMERICAN MINERALOGIST*
Fridriksson, T., Bish, D. L., Bird, D. K.
2003; 88 (2-3): 277-287
- **Si-Al disorder and solid solutions in analcime, chabazite, and wairakite** *AMERICAN MINERALOGIST*
Neuhoff, P. S., Stebbins, J. F., Bird, D. K.
2003; 88 (2-3): 410-423
- **Volcanic stratigraphy of the southern Prinsen af Wales Bjerger region, East Greenland** *Geological Society of London, Special Publication, North Atlantic Igneous Province: Stratigraphy, tectonics, volcanic and magmatic processes*
Hansen, H., Pedersen, A. K., Duncan, R. A., Bird, D. K., Brooks, C. K., Fawcett, J. J., Gittins, J., Gorton, M., O'Day, P. A.
2002; 197: 183-218
- **Geochemical and mineralogical controls on trace element release from the Penn Mine base-metal slag dump, California** *APPLIED GEOCHEMISTRY*
Parsons, M. B., Bird, D. K., Einaudi, M. T., Alpers, C. N.
2001; 16 (14): 1567-1593
- **Geological constraints on the thermodynamic properties of the stilbite-stellerite solid solution in low-grade metabasalts** *GEOCHIMICA ET COSMOCHIMICA ACTA*
Fridriksson, T., Neuhoff, P. S., Arnorsson, S., Bird, D. K.
2001; 65 (21): 3993-4008
- **Pyroclastic deposits within the East Greenland Tertiary flood basalts** *JOURNAL OF THE GEOLOGICAL SOCIETY*
Heister, L. E., O'Day, P. A., Brooks, C. K., Neuhoff, P. S., Bird, D. K.
2001; 158: 269-284
- **Partial dehydration of laumontite: thermodynamic constraints and petrogenetic implications** *MINERALOGICAL MAGAZINE*
Neuhoff, P. S., Bird, D. K.
2001; 65 (1): 59-70
- **Arsenic speciation in pyrite and secondary weathering phases, Mother Lode Gold District, Tuolumne County, California** *APPLIED GEOCHEMISTRY*
Savage, K. S., Tingle, T. N., O'Day, P. A., WAYCHUNAS, G. A., Bird, D. K.
2000; 15 (8): 1219-1244
- **A gold- and platinum-mineralized layer in gabbros of the Kap Edvard Holm complex: Field, petrologic, and geochemical relations** *ECONOMIC GEOLOGY AND THE BULLETIN OF THE SOCIETY OF ECONOMIC GEOLOGISTS*
Arnason, J. G., Bird, D. K.
2000; 95 (5): 945-970
- **Legacy of the California Gold Rush: Environmental geochemistry of arsenic in the southern Mother Lode Gold District** *INTERNATIONAL GEOLOGY REVIEW*
Savage, K. S., Bird, D. K., Ashley, R. P.
2000; 42 (5): 385-415
- **Formation of wehrlites through dehydration of metabasalt xenoliths in layered gabbros of the Noe-Nygaard Intrusion, Southeast Greenland** *GEOLOGICAL MAGAZINE*
Bernstein, S., Bird, D. K.
2000; 137 (2): 109-128
- **Zeolite parageneses in the north Atlantic igneous province: Implications for geotectonics and groundwater quality of basaltic crust** *INTERNATIONAL GEOLOGY REVIEW*
Neuhoff, P. S., Fridriksson, T., Bird, D. K.
2000; 42 (1): 15-44
- **Effects of H₂O on phase relations during crystallization of gabbros in the Kap Edvard Helm Complex, East Greenland** *JOURNAL OF PETROLOGY*
Brandriss, M. E., Bird, D. K.
1999; 40 (6): 1037-1064

- **Porosity evolution and mineral paragenesis during low-grade metamorphism of basaltic lavas at Teigarhorn, eastern Iceland** *AMERICAN JOURNAL OF SCIENCE*
Neuhoff, P. S., Fridriksson, T., Arnorsson, S., Bird, D. K.
1999; 299 (6): 467-501
- **Clays and zeolites record alteration history at Teigarhorn, eastern Iceland** *5th International Symposium on Geochemistry of the Earth Surface*
Fridriksson, T., Neuhoff, P. S., Bird, D. K., Arnorsson, S.
A A BALKEMA PUBLISHERS.1999: 377–380
- **Ar-40-Ar-39 geochronology of Tertiary mafic intrusions along the East Greenland rifted margin: Relation to flood basalts and the Iceland hotspot track** *EARTH AND PLANETARY SCIENCE LETTERS*
Tegner, C., Duncan, R. A., Bernstein, S., Brooks, C. K., Bird, D. K., Storey, M.
1998; 156 (1-2): 75-88
- **Timing and structural relations of regional zeolite zones in basalts of the East Greenland continental margin** *GEOLOGY*
Neuhoff, P. S., Watt, W. S., Bird, D. K., Pedersen, A. K.
1997; 25 (9): 803-806
- **Gold and platinum-group element mineralization in the Kruuse Fjord Gabbro complex, East Greenland** *ECONOMIC GEOLOGY AND THE BULLETIN OF THE SOCIETY OF ECONOMIC GEOLOGISTS*
Arnason, J. G., Bird, D. K., Bernstein, S., Kelemen, P. B.
1997; 92 (4): 490-501
- **Petrology and geochemistry of the Kruuse Fjord Gabbro Complex, east Greenland** *GEOLOGICAL MAGAZINE*
Arnason, J. G., Bird, D. K., Bernstein, S., ROSE, N. M., Manning, C. E.
1997; 134 (1): 67-89
- **Dehydration, partial melting, and assimilation of metabasaltic xenoliths in gabbros of the Kap Edvard Holm Complex, East Greenland** *AMERICAN JOURNAL OF SCIENCE*
Brandriss, M. E., Bird, D. K., ONEIL, J. R., Cullers, R. L.
1996; 296 (4): 333-393
- **IMPRINT OF METEORIC WATER ON THE STABLE-ISOTOPE COMPOSITIONS OF IGNEOUS AND SECONDARY MINERALS, KAP-EDVARD-HOLM-COMPLEX, EAST GREENLAND** *CONTRIBUTIONS TO MINERALOGY AND PETROLOGY*
Brandriss, M. E., NEVLE, R. J., Bird, D. K., ONEIL, J. R.
1995; 121 (1): 74-86
- **A GOLD-BEARING HORIZON IN THE KAP EDVARD HOLM COMPLEX, EAST GREENLAND** *ECONOMIC GEOLOGY AND THE BULLETIN OF THE SOCIETY OF ECONOMIC GEOLOGISTS*
Radford, G., Bernstein, S., GANNICOTT, R. A., Kelemen, P. B.
1995; 90 (5): 1288-1300
- **A gold-bearing horizon in the Kap Edvard Holm Complex, East Greenland** *Economic Geology*,
Bird, D. K., Arnason, J. G., Brandriss, M. E., Nevle, R. J., Radford, G., Bernstein, S., Guanacos, R. A., Keleman, P. B.
1995; 90: 1288-1300
- **TERTIARY PLUTONS MONITOR CLIMATE-CHANGE IN EAST GREENLAND** *GEOLOGY*
NEVLE, R. J., Brandriss, M. E., Bird, D. K., McWilliams, M. O., ONEIL, J. R.
1994; 22 (9): 775-778
- **HYDROTHERMALLY ALTERED DOLERITE DYKES IN EAST GREENLAND - IMPLICATIONS FOR CA-METASOMATISM OF BASALTIC PROTOLITHS** *CONTRIBUTIONS TO MINERALOGY AND PETROLOGY*
ROSE, N. M., Bird, D. K.
1994; 116 (4): 420-432
- **Porosity, permeability and basalt metamorphism** *Geological Society of America Special Paper*
Manning, C. E., Bird, D. K.
1994; 296: 123-140
- **MISSING MINERAL ZONES IN CONTACT METAMORPHOSED BASALTS** *AMERICAN JOURNAL OF SCIENCE*
Manning, C. E., Ingebritsen, S. E., Bird, D. K.

1993; 293 (9): 894-938

- **AL-FE3+ AND F-OH SUBSTITUTIONS IN TITANITE AND CONSTRAINTS ON THEIR P-T DEPENDENCE** *EUROPEAN JOURNAL OF MINERALOGY*
Enami, M., Suzuki, K., Liou, J. G., Bird, D. K.
1993; 5 (2): 219-231
- **Variables controlling epidote composition** *Abhandlungen der Geologischen Bundesanstalt v.293*
Amason, J. G., Bird, D. K., Liou, J. G.
edited by Hock, V., Koller, F.
1993: 17-25
- **CI-BEARING AMPHIBOLE IN THE SALTON-SEA GEOTHERMAL SYSTEM, CALIFORNIA** *CANADIAN MINERALOGIST*
Enami, M., Liou, J. G., Bird, D. K.
1992; 30: 1077-1092
- **METHANE-BEARING, AQUEOUS, SALINE SOLUTIONS IN THE SKAERGAARD INTRUSION, EAST-GREENLAND** *CONTRIBUTIONS TO MINERALOGY AND PETROLOGY*
Larsen, R. B., Brooks, C. K., Bird, D. K.
1992; 112 (2-3): 428-437
- **AN OCEAN-RIDGE TYPE MAGMA CHAMBER AT A PASSIVE VOLCANIC, CONTINENTAL-MARGIN - THE KAP-EDVARD-HOLM LAYERED GABBRO COMPLEX, EAST GREENLAND** *GEOLOGICAL MAGAZINE*
Bernstein, S., Rosing, M. T., Brooks, C. K., Bird, D. K.
1992; 129 (4): 437-456
- **EXPERIMENTAL INVESTIGATION OF MASS-TRANSFER ALBITE, CAAL-SILICATES, AND AQUEOUS-SOLUTIONS** *AMERICAN JOURNAL OF SCIENCE*
ROSE, N. M., Bird, D. K., Liou, J. G.
1992; 292 (1): 21-57
- **DEPENDENCE OF HYDROTHERMAL ALTERATION ON ROCK TEXTURE AND MICROPOROSITY IN MAFIC CRYSTALLINE ROCKS** *7TH INTERNATIONAL SYMP ON WATER-ROCK INTERACTION (WRI-7)*
Brandriss, M. E., Bird, D. K., ONEIL, J. R.
A A BALKEMA.1992: 1477-1480
- **ENHANCEMENT OF POROSITY IN GABBROS BY DIKE INTRUSION** *7TH INTERNATIONAL SYMP ON WATER-ROCK INTERACTION (WRI-7)*
NEVLE, R. J., Bird, D. K.
A A BALKEMA.1992: 1533-1536
- **A GOLD-BEARING HORIZON IN THE SKAERGAARD INTRUSION, EAST-GREENLAND** *ECONOMIC GEOLOGY AND THE BULLETIN OF THE SOCIETY OF ECONOMIC GEOLOGISTS*
Bird, D. K., Brooks, C. K., GANNICOTT, R. A., Turner, P. A.
1991; 86 (5): 1083-1092
- **OXYGEN-ISOTOPE EXCHANGE AND MINERAL ALTERATION IN GABBROS OF THE LOWER LAYERED SERIES, KAP EDVARD HOLM COMPLEX, EAST GREENLAND** *GEOLOGY*
Fehlhaber, K., Bird, D. K.
1991; 19 (8): 819-822
- **POROSITY EVOLUTION AND FLUID-FLOW IN THE BASALTS OF THE SKAERGAARD MAGMA-HYDROTHERMAL SYSTEM, EAST GREENLAND** *AMERICAN JOURNAL OF SCIENCE*
Manning, C. E., Bird, D. K.
1991; 291 (3): 201-257
- **FLUORIAN GARNETS FROM THE HOST ROCKS OF THE SKAERGAARD INTRUSION - IMPLICATIONS FOR METAMORPHIC FLUID COMPOSITION** *AMERICAN MINERALOGIST*
Manning, C. E., Bird, D. K.
1990; 75 (7-8): 859-873
- **CHEMICAL MODIFICATION OF EAST GREENLAND TERTIARY MAGMAS BY 2-LIQUID INTERDIFFUSION** *GEOLOGY*

- Rosing, M. T., Leshner, C. E., Bird, D. K.
1989; 17 (7): 626-629
- **PROGRADE PHASE-RELATIONS IN THE STATE 2-14 WELL METASANDSTONES, SALTON-SEA GEOTHERMAL-FIELD, CALIFORNIA** *JOURNAL OF GEOPHYSICAL RESEARCH-SOLID EARTH AND PLANETS*
Cho, M., Liou, J. G., Bird, D. K.
1988; 93 (B11): 13081-13103
 - **EPIDOTE-BEARING VEINS IN THE STATE 2-14 DRILL HOLE - IMPLICATIONS FOR HYDROTHERMAL FLUID COMPOSITION** *JOURNAL OF GEOPHYSICAL RESEARCH-SOLID EARTH AND PLANETS*
Caruso, L. J., Bird, D. K., Cho, M., Liou, J. G.
1988; 93 (B11): 13123-13133
 - **COMPOSITIONAL, ORDER-DISORDER, AND STABLE ISOTOPE CHARACTERISTICS OF AL-FE EPIDOTE, STATE 2-14 DRILL HOLE, SALTON-SEA GEOTHERMAL SYSTEM** *JOURNAL OF GEOPHYSICAL RESEARCH-SOLID EARTH AND PLANETS*
Bird, D. K., Cho, M., Janik, C. J., Liou, J. G., Caruso, L. J.
1988; 93 (B11): 13135-13144
 - **HYDROTHERMAL ALTERATION OF TERTIARY LAYERED GABBROS, EAST GREENLAND** *AMERICAN JOURNAL OF SCIENCE*
Bird, D. K., Manning, C. E., ROSE, N. M.
1988; 288 (5): 405-457
 - **PREHNITE EPIDOTE PHASE-RELATIONS IN THE NORDRE APUTITEQ AND KRUISE FJORD LAYERED GABBROS, EAST GREENLAND** *JOURNAL OF PETROLOGY*
ROSE, N. M., Bird, D. K.
1987; 28 (6): 1193-1218
 - **VARIATION IN SERICITE COMPOSITIONS FROM FRACTURE-ZONES WITHIN THE COSO HOT-SPRINGS GEOTHERMAL SYSTEM** *GEOCHIMICA ET COSMOCHIMICA ACTA*
Bishop, B. P., Bird, D. K.
1987; 51 (5): 1245-1256
 - **HYDRATION OF CORUNDUM-BEARING XENOLITHS IN THE QORQUT GRANITE COMPLEX, GODTHABSFJORD, WEST GREENLAND** *AMERICAN MINERALOGIST*
Rosing, M. T., Bird, D. K., Dymek, R. F.
1987; 72 (1-2): 29-38
 - **FRACTURE PROPAGATION ASSOCIATED WITH DIKE EMPLACEMENT AT THE SKAERGAARD INTRUSION, EAST GREENLAND** *JOURNAL OF STRUCTURAL GEOLOGY*
Rogers, R. D., Bird, D. K.
1987; 9 (1): 71-86
 - **MINERALOGY AND GEOCHEMICAL EVOLUTION OF THE LITTLE 3 PEGMATITE-APLITE LAYERED INTRUSIVE, RAMONA, CALIFORNIA** *AMERICAN MINERALOGIST*
Stern, L. A., Brown, G. E., Bird, D. K., JAHNS, R. H., Foord, E. E., Shigley, J. E., SPAULDING, L. B.
1986; 71 (3-4): 406-427
 - **HYDROTHERMAL CLINOPYROXENES OF THE SKAERGAARD INTRUSION** *CONTRIBUTIONS TO MINERALOGY AND PETROLOGY*
Manning, C. E., Bird, D. K.
1986; 92 (4): 437-447
 - **HYDROTHERMAL MINERALOGY OF CALCAREOUS SANDSTONES FROM THE COLORADO RIVER DELTA IN THE CERRO PRIETO GEOTHERMAL SYSTEM, BAJA-CALIFORNIA, MEXICO** *MINERALOGICAL MAGAZINE*
Schiffman, P., Bird, D. K., Elders, W. A.
1985; 49 (352): 435-449
 - **Geologic field studies of the Miki Fjord area, East Greenland** *Bulletin of the Geological Society of Denmark*
Bird, D. K., Rosing, M. T., Manning, C. E., Rose, N. M.
1985; 34: 219-236
 - **THE GEOMETRY AND HIGH-TEMPERATURE BRITTLE DEFORMATION OF THE SKAERGAARD INTRUSION** *JOURNAL OF GEOPHYSICAL RESEARCH*

Norton, D., Taylor, H. P., Bird, D. K.
1984; 89 (NB12): 178-192

- **ACTIVE METASOMATISM IN THE CERRO-PRIETO GEOTHERMAL SYSTEM, BAJA-CALIFORNIA, MEXICO - A TELESCOPED LOW-PRESSURE, LOW-TEMPERATURE METAMORPHIC FACIES SERIES** *GEOLOGY*
Schiffman, P., Elders, W. A., Williams, A. E., McDowell, S. D., Bird, D. K.
1984; 12 (1): 12-15
- **CALC-SILICATE MINERALIZATION IN ACTIVE GEOTHERMAL SYSTEMS** *ECONOMIC GEOLOGY*
Bird, D. K., Schiffman, P., Elders, W. A., Williams, A. E., McDowell, S. D.
1984; 79 (4): 671-695
- **HYDROTHERMAL FLOW REGIME AND MAGMATIC HEAT-SOURCE OF THE CERRO PRIETO GEOTHERMAL SYSTEM, BAJA-CALIFORNIA, MEXICO** *GEOTHERMICS*
Elders, W. A., Bird, D. K., Williams, A. E., Schiffman, P.
1984; 13 (1-2): 27-47
- **CHEMICAL INTERACTION OF AQUEOUS-SOLUTIONS WITH EPIDOTE-FELDSPAR MINERAL ASSEMBLAGES IN GEOLOGIC SYSTEMS .2. EQUILIBRIUM CONSTRAINTS IN METAMORPHIC-GEOTHERMAL PROCESSES** *AMERICAN JOURNAL OF SCIENCE*
Bird, D. K., Helgeson, H. C.
1981; 281 (5): 576-614
- **THEORETICAL PREDICTION OF PHASE-RELATIONS AMONG AQUEOUS-SOLUTIONS AND MINERALS - SALTON-SEA GEOTHERMAL SYSTEM** *GEOCHIMICA ET COSMOCHIMICA ACTA*
Bird, D. K., Norton, D. L.
1981; 45 (9): 1479-1493
- **CHEMICAL INTERACTION OF AQUEOUS-SOLUTIONS WITH EPIDOTE-FELDSPAR MINERAL ASSEMBLAGES IN GEOLOGIC SYSTEMS .1. THERMODYNAMIC ANALYSIS OF PHASE-RELATIONS IN THE SYSTEM CAO-FEO-FE2O3-AL2O3-SIO2-H2O-CO2** *AMERICAN JOURNAL OF SCIENCE*
Bird, D. K., Helgeson, H. C.
1980; 280 (9): 907-941
- **SUMMARY AND CRITIQUE OF THE THERMODYNAMIC PROPERTIES OF ROCK-FORMING MINERALS** *AMERICAN JOURNAL OF SCIENCE*
Helgeson, H. C., DELANY, J. M., Nesbitt, H. W., Bird, D. K.
1978; 278: 1-229