VITA: RICHARD DOUGLAS ELMORE

BUSINESS ADDRESS:
ConocoPhillips School of Geology & Geophysics
University of Oklahoma
Norman, Oklahoma 73019
(405) 325-3253
Email: delmore@ou.edu

HOME ADDRESS:
1704 Devon Ct.
Norman, Oklahoma 73072

PERSONAL INFORMATION:
CITIZENSHIP: U.S

EDUCATION:

1981	Ph.D. (Geology) University of Michigan, Ann Arbor, Michigan
1976	M.S. (Geology) Duke University, Durham, North Carolina
1974	B.A. (Geology) Earlham College, Richmond, Indiana

PRESENT POSITION: Edward L. McCollough Professor, ConocoPhillips School of Geology and Geophysics

ACADEMIC & ADMINISTRATIVE POSITIONS:

Director, School of Geology and Geophysics (100%), January 2006-December 2017

Provide leadership and direction in the planning, development, and delivery of academic programs in a school of 20 faculty and 8.5 staff. Direct the hiring, budgetary, personnel, operational, and student-oriented activities in the school. Represent the school and university externally, including maintaining and strengthening ties with alumni. Lead the fund raising efforts in the school. Recent initiatives: 1) the Bartell Field Camp in Cañon City Colorado (from fund raising of initial idea to final construction), 2) Writing Across the Curriculum effort resulting in Geowriting course, more writing in courses, and a writing center branch office, 3) a new geophysics capstone field course at our new camp, and 4) a plan to increase the number of undergraduates conducting research.

Associate Provost, University of Oklahoma (40%, 60% Gelogy), January, 2004-June 30, 2014 Coordinated the Academic Program Review process (e.g., set up review committees, conduct reviews, etc.), conducted low productivity and post-audit reviews of programs as required by the Oklahoma State Regents for Higher Education, worked on student writing and curriculum issues, provided advice to the Provost on academic, personnel and budget issues, served as Provost for the Department of English, and other miscellaneous projects.

Associate Dean, College of Geosciences (50%, 50% Geology), 2000-2004

Responsibilities included long term projects (e.g., initiative to develop web-enhanced/online courses), developed online course policy, and developed an

online writing and plagiarism guide, worked on retention and diversity issues as well as the college strategic plan with staff, coordinated acquisition of extra funds for General Education courses, upgraded classroom technology and day-to-day operations (reports, events, advice, etc.).

Robert and Doris Klabzuba Professor of Geology, University of Oklahoma, 1992-2006
Associate Professor of Geology, The University of Oklahoma, 1986-1992
Assistant Professor of Geology, The University of Oklahoma, 1981-1986

RESEARCH INTERESTS

My current research interests are focused determining the timing and origin of fluid flow and burial diagenetic events. My students and I are using an integrated paleomagnetic/geochemical approach to date diagenetic events and to investigate the nature of the diagenetic alteration. We recently completed integrated diagenetic studies of units such as the Marcellus Shale in Pennsylvania, and Mississippian Formation in Oklahoma and we are currently finishing up studies of the Wolfcamp (Texas), Antrim Shale (Michigan Basin) where are testing if we can date hydrothermal alteration center of the basin. One of my students just started a study of the New Albany Shale in Kentucky/Indiana. We just published a paleomagnetic and diagenetic study of the Woodford in Oklahoma, where we have dated hydrothermal alteration in mineralized veins to the late Permian. Several students also finished diagenetic studies of the Meramec in Oklahoma. We also recently completed a paleomagnetic and diagenetic study of the Kentland Impact crater in Indiana. Current students are working on diagenetic studies of Precambrian the Nonesuch Shale and stromatolites in the Copper Harbor Conglomerate in upper Michigan, as well as determining the timing of tectonic dolomites in Ordovician limestones in Kentucky.

We are also conducting diagenetic and paleomagnetic studies of Precambrian rocks in Oklahoma. One study focuses on developing a better understand of induced seismicity in Oklahoma. Oklahoma has experienced a dramatic increase in seismicity since 2009 and most widely accepted hypothesis for the increase in earthquakes is the disposal of produced water from oil and gas wells into the Arbuckle Group. The nature of the communication between the Arbuckle Group and the basement, where the earthquakes occur, has not been documented, but is presumably through fractures and faults. We are characterizing the upper part of the basement to test for fluid conduits and alteration. Another project is focused on constraining Cambrian apparent polar wander of North America. The data for this time period is sparse and samples from across the igneous rocks of the Southern Oklahoma Aulacogen (SOA) will be collected to maximize reliability and potentially identify the cause of disparities between Cambrian magnetic data from Oklahoma and elsewhere in North America.

Another project is on paleoweathering surfaces and their climatic implications. Permo-Triassic chemical remanent magnetizations (CRMs) are reported granitic rocks below weathering surfaces from several localities in Europe and in North America. We

are currently investigating if similar paleoweathering surfaces occur at the Precambrian-Cambrian boundary at several localities.

Several years ago I was the lead PI on an NSF-supported project "Diversity in Geosciences: Development of a "Pipeline" for Native American Students at the University of Oklahoma"

TEACHING EXPERIENCE:

Courses taught in 2012-2019: Diagenesis; Sedimentology and Sedimentary Petrology; Paleomagnetism; Paleomagnetism/Diagenesis seminar; Physical Geology for Scientists and Engineers; Clastic Facies; Earth Systems on the Southern Plains; Field Geology, Regional field trip for field camp (one week).

Other Courses: Deep Space: Deep Time (Honors course); Physical Geology; Geology for Non-Science Majors (regular and Honors sections); Shallow Marine Carbonate Geology; Catastrophic Sedimentology; Depositional Systems and Stratigraphy; Carbonates and Fluids; Clastic Diagenesis Seminar; Turbidite Seminar.

Graduate Student Supervision

- 11 PhD students completed
- 66 MS students completed
- 1 M.S. and 3 Ph.D. students are in progress

ACADEMIC SERVICE

PROFESSIONAL SERVICE:

GSA GeoCareers Committee
NSF Proposal Panels, 2015-2018
Invited to or organize a session on remagnetization/alteration/diagenesis at the Santa Fe Rock Magnetism meeting summer of 2014.
External Review Committee, Department of Geology, Kansas State University, 2014
Organized Session at AGU Meeting, San Francisco, 2013
Lead book editor, Remagnetization of Sedimentary Rocks, in press, Geological Society of London, 2012
Organized Session at AGU Meeting, San Francisco, 2011
Organized Session at AGU meeting, Brazil, summer 2010.
NSF Proposal Panel, 2009
Short Course, Paleomagnetism and Diagenesis, Geofluids 5, Windsor Ontario, 2006
External Program Review Committee, Geological and Mining Engineering and Sciences, Michigan Tech University, 2004
Geological Society of America Nominations Committee, 2004 - 2006
Oak Ridge Associated Universities Councilor, University of Oklahoma, 2000-2009
Geological Society of America Day Medal Committee, 2001 - 2003
Co-Editor, *Physics and Chemistry of the Earth* issue on Remagnetization, 2003

Department of Energy Proposal Review Panel, Basic Energy Sciences, 1999
Associate Editor, Journal of Geophysical Research, 1996-1998
Geological Society of America Donath Medal Committee, 1998-2001
Associate Editor, Geological Society of America Bulletin, 1991-1996
Member, Earth, Planetary, and Space Sciences Advocacy Committee, American Geophysical Union, 1991-1992
Program Chairman, Paleomagnetics Section, American Geophysical Union, Spring Meeting, 1991-1992
Session Chairman, American Geophysical Union, European Geophysical Society and American Association Petroleum Geologists-Society Economic Mineralogists and Paleontologists, IUGG-Perugia Italy, 2007, and Geological Society of America meetings
Manuscript reviews for Geological Society of America Bulletin, Journal of Geophysical Research, American Association of Petroleum Geologists Bulletin, Geophysical Research Letters, Journal of Sedimentary Research, Sedimentology, Geophysical Journal, Journal of the Royal Astronomical Society, Geochimica et Cosmochimica Acta, Canadian Journal of Earth Science, Journal of Geology, Earth and Planetary Science Letters, Geophysical International, Physics and Chemistry of the Earth, Interpretation.
Proposal reviews for National Science Foundation, Department of Energy, American Chemical Society, and NSREC (Canada).
Co-leader of field trip (Invited), Upper Keweenawan Rift Fill Sequence, Mid-Continent Rift, Michigan: Michigan Basin Geological Society, 1988

UNIVERSITY/SCHOOL/COLELGE SERVICE

Outreach Supervisor for Pick and Hammer Club 2014-2019 (wrote proposals and supervised outreach by students
Chair, OGS Director Search committee, 2019
Chair, Geophysics search committee, 2019
Writing Center Advisory Committee
MCEE Senior award committee
CPSGG undergraduate Teaching committee
Director, Bartell Field Camp 2011-resent
University Admissions Committee (2004-2014)
Freshman field trip with Holloway and Weaver. (January 2009 - 2018).
Chair, Geophysics Search Committee, 2014-2015
Chair, Committee to establish a new CPSGG Field Camp (2009-2013)
Member, University Accreditation Team Committee, 2011-2013.
Search Committee for Executive Director of Recruitment Services, 2012
Task Force on SRI set up by Vice President for Research (VPR), 2007-2008
Task Force on Centers, set up by VPR, 2007
University Culture Committee (retention), 2002-2004

General Education Committee, University of Oklahoma, 1998-2005.
Goldwater Scholarship Selection Committee, 2003-2004
Honors Coordinator, Geology and Geophysics, 1992-2009
McNair Mentor
Campus Departmental Review Committee, 1995 and 2001
Graduate Assessment Committee, 2002
Chair, Geosciences Educational - Technology Committee, 2000 - 2004
Chair, Geosciences Academic Programs Committee, 2000 - 2004
College of Geosciences Dean Search Committee, 1994
College of Arts & Sciences Tenure Review Committee, 1991
Executive Committee, College of Liberal Studies, University of Oklahoma, 1991-1995
Energy Center Fellow, University of Oklahoma, 1991-1993
Chair, Campus Tenure Committee, University of Oklahoma, 1988-1989
Member, Campus Tenure Committee, University of Oklahoma, 1987-1989
Director, Paleomagnetics Laboratory, University of Oklahoma, 1985-present
Chair, Geology Graduate Admissions Committee, University of Oklahoma, 1985-1987
Committee "A", Geology and Geophysics, 1987-1989, 1994-1996
Honors Task Force, University of Oklahoma, 1986-1987

AWARDS/HONORS

- Outstanding outreach Award, 2018, (From Pick and Hammer club)
- Outstanding Professor, College of Geosciences, 2000
- Educator's Leadership Academy, 1999-2000
- Outstanding Professor, College of Geosciences, 1997
- American Association of Petroleum Geologists Distinguished Lecturer, 1993-1994
- Fellow, Geologic Society of America
- Cunningham Award for Undergraduate Teaching, 1993, School of Geology and Geophysics
- Outstanding Paper Award, SEPM National Meeting, 1991
- Regents Award for Superior Teaching, 1989
- Outstanding Professor, College of Geosciences, 1989
- Sigma Xi Faculty Research Award, 1988
- Associates Distinguished Lectureship Awards, 1985-1989, University of Oklahoma
- Baldwin Award for Outstanding Teaching, The University of Oklahoma, 1982
- Junior Faculty Summer Fellowship, The University of Oklahoma, 1982
- Outstanding Teaching Assistant Award, The University of Michigan, 1980
- Graduated with College and Departmental Honors, Earlham College, 1974.

RECENT INVITED PRESENTATIONS

-Invited talk at GSA meeting 2018 on the Kentland Impact Crater in an Impact session

-Invited talk at Santa Fe Rock Magnetism meeting, summer of 2014 (Dulin and Elmore).
-AGU, Iguassu Joint Assembly - 2010
-Oklahoma State University, 2009
-Georgia State University, 2003
- 2003 GSA meeting, Seattle
- IAGA meeting, 2001
- Plenary lecture at Geofluids II Meeting in Ireland (3/97)
- Numerous talks at Universities and Research Symposia prior to 2000.

PROFESSIONAL SOCIETIES

SEPM
Geological Society of America
American Geophysical Union
American Association Petroleum Geologists

RESEARCH GRANTS – EXTERNAL

-Outreach by the OU School of Geology and Geophysics to local K12 Schools, Halliburton, 8-15-2019 - 8-14-2020, $20,000.
-Outreach by the OU School of Geology and Geophysics to local K12 Schools, Halliburton, 8-15-2018 - 8-14-2019, $20,000.
-Diagenetic study of Meramec, Major and Garvin counties, Oklahoma, 12-15-2016 - 12-14-2018, $97,093
Characterization of the Basement and Fluid conduits in Arbuckle Group," Sponsored by OGS-Governor's office Oklahoma, State, $85,000. (March 2016 – June 30, 2018).
-Outreach by the OU School of Geology and Geophysics to local K12 Schools, Halliburton, 8-15-2017 - 8-14-2018, $20,000.-
-Outreach by the OU School of Geology and Geophysics to local K12 Schools, Halliburton, 8-15-2016 - 8-14-2017, $20,000.
- Outreach by the OU School of Geology and Geophysics to local K12 Schools, Halliburton, 8-15-2015 - 8-14-2016, $20,000.
- Integrated Diagenetic study of the Wolfcampian and the Cline Shale cores, Texas, Devon Energy, 12-15-2014 - 12-14-2015, $150,173.
-Purchase of an SEM for the School of Geology and Geophysics. Devon Energy, 12-15-2014 - 12-14-2015, $300,000.
- Outreach by the OU School of Geology and Geophysics to local K12 Schools, Halliburton, 8-15-2014 - 8-14-2015, $20,000.
– Mississippian Lime Consortia (with Pranter, Rich, Deepak, Marfurt), 7/1/13-6/30/15, ~$150,000/year.
– Granite Wash Consortia (with Pranter, Rich, Deepak, Slatt, Mitra), 7/1/13-6/30/15, ~$100,000/year.
– Mineralogy of Shales, Limestones, and Sandstones (with Madden), Devon Energy, 7-1-

13-6-30-14, $117,239.
- Clay Mineralogy of Shales (with Madden), Devon Energy, 7/1/12-6/30/13, $118,242.
- Integrated Depositional and Diagenetic study of the Mississippian Limestone in Oklahoma Devon Energy, 7/1/11-6/30/13, $200,103.
- Clay Mineralogy of Shales (with Madden), Devon Energy, 7/1/11-6/30/12, $111,820.
- Outreach for Native American Students, Baker Hughes, 8/2011-7/2012, $25,000.
- Integrated Diagenetic study of the Marcellus Shale, Devon Energy, 7/1/10-6/30/12, $99,952.
- Request for a XRD and funds to support data collection, Devon Energy, $359,963, 7/1/10-6 30/11.
- Diagenesis of the Barnett Shale and Ellenburger Group (Fort Worth Basin): Timing and origin of karsting- fracturing-faulting as well as associated fluid migration and other events, Devon Energy, $259,923, 7/1/09-6/30/11
-Paleomagnetism of NW Borneo, $30,000, 12/1/08-12/1/09, Shell Oil Company
-Diagenesis and Magnetic Characteristics of the Barnett Shale (Texas), Devon Petroleum, $155,019, 7/1/08-6/30/10.
-Development of a "pipeline" for Native American Students (PI, with CO-PIs Watson, Kloesel, and Kidwell), NSF, $530,634, 8/1/05-7/31/11.
-Development and application of a paleomagnetic/geochemical method for constraining the timing of fluid migration and other diagenetic events (with Engel), DOE, $45,473, 9/2004-10/2005.
-A Comprehensive Planning Effort for the Development of a Grassland Field Station at the University of Oklahoma (Wallace, Dalton, Snow, Matthews, Elmore, Fiebrich, Uno), NSF, $23,532, 8/04-7/05.
-Development and application of a paleomagnetic/geochemical method for constraining the timing of fluid migration and other diagenetic events (with Engel), DOE, $205,120, 9/2002-10/2004.
-Environmental Risk Assessment and Conflict Vulnerability Analysis (with Perkins and Corr), FESS, $174, 607 (70% credit to RDE), 5/1/03-9/30/03.
-Monitoring Hydrocarbon/Metal Contamination and Bioremediation by Soil Magnetic Susceptibility (SMS) and Cesium Magnetometer Surveys, CACI-ASG, $47, 498, 6/1/02-8/31/02.
-Development and application of a paleomagnetic/geochemical method for constraining the timing of fluid migration and other diagenetic events (with Engel), DOE, $251,907, 9/2000-8/2002.
-Origin of the Red Dog Zinc-Lead Deposit, COMINCO, $25,000, 1/1/2001-4/30/02
-Minerals and Submicrometer Forms as Biosignatures (with Blake, Cady, Trieman, Haymet, Kato), NASA (NASA-Ames University Consortium), $215,940, 10/1/99-5/15/02.
-Supplement to purchase a new thermal demagnetizer: Remagnetization and Orogenic fluids: Testing the hypothesis in the Central Appalachians, NSF, $9785, 1/01-12/01.
-Remagnetization and Orogenic fluids: Testing the hypothesis in the Central Appalachians, NSF, $98,577, 1/1/ 99-12/31/2001.
-Development and application of a paleomagnetic/geochemical method for constraining the timing of fluid migration and other diagenetic events (with Engel), DOE, 259,011, 9/98-8/2000.

-Vox Terrae Int'l, Calgary, AB (Independent Oil Company) Paleomagnetic orientation of cores, 2000, $3000.

-Integrated Sedimentologic/Rock magnetic Records of Late Paleozoic Climate, Western Pangea (with L. Soreghan), NSF, $129,555, 7/1/98-12/31/2000.

-Integration of Laboratory and Lecture within an Introductory Geology Course: Combining a Constructivist and Case Study Approach (with Mike Soreghan), NSF, $90,360, 1/1/98-6/30/2000.

-Paleomagnetism of a fault zone, NSF, subcontract from Indiana University, $3000, 1997.-Development and application of a paleomagnetic/geochemical method for constraining the timing of fluid migration and other diagenetic events (with Engel), DOE, $249,243, 9/96-8/98.

-A study of hydrocarbon migration events: development and application of new methods for constraining the time of migration and an assessment of rock-fluid interactions (with M.H. Engel): DOE, $670,856, 9/1/91-8/31/96.

-Acquisition of cryogenic magnetometer, NSF, $78,000, 8/94-8/95.

-Automation and Characterization of Environmental Research Facility (w/Knox, Vieux, Gremillion, Everett, Crawford, Young, and Ahern), NSF/EPSCoR, $274,442, 7/1/95-6/30/99.

-Chemical remagnetization: Testing the orogenic fluid hypothesis: NSF, $90,066, 8/93-7/96.

-Paleomagnetic dating of hydrocarbon migration and timing of hydrocarbon entrapment in the Schoolhouse Member of the Maroon Formation, northwest Colorado (with D. Fruit): Chevron, Mobil, $3,000, 1991.

-Testing the relative roles of eustacy and tectonics for the origin of Middle Pennsylvanian cyclothems in southern Oklahoma using biostratigraphy and sedimentology (with Sutherland): NSF, $78,000, 1/15/91-6/30/93.

-Chemical remagnetization: Testing for relationships with basinal fluids and in situ diagenetic processes (with London), NSF, $75,000, 4/90-9/92.

-Regional assessments of the hydrocarbon potential of selected North American Proterozoic rock sequences (with M.H. Engel). DOE, $217,573, 9/89-8/91.

-Permian karst topography in the Slick Hills, southwestern Oklahoma (with N. Donovan and M. Engel), National Geographic Society (subcontract to O.U. from Texas Christian University), $5112, 1989-1990.

-Dating hydrocarbon migration events using paleomagnetic techniques. NATO Collaborative Research grant (in collaboration with Dr. Leythaeuser, KFS Jullich), $5552, 1988-1990.

-Relationship between hydrocarbons and authigenic magnetite: Testing the hypothesis: Mobil and Tenneco Oil Co. (e.g., Mobil), $7000, 1987-1989.

-The origin of secondary magnetizations residing in magnetite: Testing the magnetite-hydrocarbon hypothesis: NSF, $64,660, 2/87-4/90.

-Relationship between hydrocarbons and authigenic magnetite: Testing the hypothesis: DOE, $62,000, 11/1/86-1/30/89.

-Relationship between hydrocarbons and formation of authigenic magnetite: Testing the hypothesis: ACS-Type AC Grant, $35,000, 9/1/86-9/1/89.

-Relationship between hydrocarbons and authigenic magnetite: Industrial Associates Program: several companies, $7,000, 1986-1987.
-Relationship between hydrocarbons and formation of authigenic magnetite: testing the hypothesis: ARCO Junior Faculty Support Award, $20,000, 1985-1987.
-Sedimentologic, diagenetic, and organic geochemical study of the Nonesuch Shale (with Engel): Texaco, $49,726, 1985-1986.
-A study of the timing of diagenetic events in sedimentary rocks using paleomagnetic analysis: National Science Foundation, $29,000, 7/84-12/85.
-Paleomagnetics and Diagenesis: Independent Oil Company, $3,500, 1982-1983.

RESEARCH GRANTS – INTERNAL

-Request for a new Magnetic Susceptibility System, OU Research Council, 12/99, $3000.
-Investigation of the interaction of pedogenic processes and hydrocarbon microseepage using magnetic and geochemical techniques with potential environmental and hydrocarbon exploration techniques: OMMRRI, $10,000, 2/93-12/93.
-A test of soil magnetic susceptibility as evidence of hydrocarbon microseepage, OMMRRI, $12,650.50, 1991-1992.
-New electronics for magnetometer: University Associates Fund and College of Geosciences Fund, $23,000, 1991.
-Paleomagnetic dating of hydrocarbon migration, Research Council, Univ. of Oklahoma, 1990, $2,657.50.
-The dating of MVT mineralization, the origin of mineralizing fluids, and the nature of migration pathways in carbonates of the northern Arbuckle Mountains, OMMRRI, $11,000, 1989-1990.
-The relationship between hydrocarbons, aqueous fluids, and MVT-type ore deposits in carbonates of the northern Arbuckle Mountains, Oklahoma: OMMRRI, $10,717, 1988-1989.
-An international collaborative research program for dating hydrocarbon events (with Engel): Research Council, University of Oklahoma, 1988, $5,252.
-The origin of MVT ore deposits: testing for a relationship with hydrocarbons: Oklahoma Mining and Mineral Resources Research Institute, $11,894, 1987-1988.
-Relationship between hydrocarbons and formation of authigenic magnetic minerals: Testing the hypothesis, laboratory simulation experiments (with M.H. Engel): Energy Resources Institute, University of Oklahoma, $21,598, 1986-1987.
-Absolute dating of a diagenetic event using paleomagnetic analysis: Research Council, University of Oklahoma, summer, 1985, $1,800.
-Dating of diagenetic events using paleomagnetic analysis: Research Council, University of Oklahoma, summer, 1983, $4,000.
-Investigation of selected geologic parameters important to reservoir evaluation: Energy Resources Institute, 1983, $16,000.
-Origin of hematite and its associated remanence in red beds: Energy Resources Center Grant, University of Oklahoma, 1982, $16,000.

-Request for Geophysical Instrumentation - Superconducting Magnetometer (with DuBois and Crowley): OU Associates Research Fund, 1982, $45,470.

-Multielemental Analysis Facility (Principal Investigator - H.J. Fischbeck; others - Ryan, Cameron, Black, Elmore): OU Associates Research Fund, 1982, $30,000.

PUBLICATIONS-Papers

Elmore, R. Douglas, Pilkey, O.H., Cleary, W.J., and Curran, H.A., 1979, The Black Shell Turbidite, Hatteras Abyssal Plain, western Atlantic Ocean: *Geol. Soc. America Bull*., v. 90, pt. 1, p. 1165-1176.

Briggs, L.I., Gill, Dan, Briggs, D., and Elmore, R. Douglas, 1980, Transition from Open Marine to Evaporite Deposition in the Silurian Michigan Basin: in *Hypersaline Brines and Evaporitic Environments*, A. Nissenbaum, editor, p. 253-270.

Elmore, R. Douglas, and Farrand, W.R., 1981, Tar sands in synorogenic Mio-Pliocene molasses deposits, Zagros Mountains, Iran: *AAGP Bull*., v. 65, p. 1160-1165

Elmore, R.D. and Van der Voo, R., 1982, Origin of hematite and its associated remanence in the Copper Harbor Conglomerate (Keweenawan), Upper Michigan: *J. Geophys. Res*., v. 87, p. 10,918-10,928.

Elmore, R.D., 1983, Precambrian nonmarine stromatolites in alluvial fan deposits, the Copper Harbor Conglomerate, Upper Michigan: *Sedimentology*, v. 30, p. 829-842.

Elmore, R.D., 1984, The Copper Harbor Conglomerate: A Precambrian transgressive alluvial fan sequence in northern Michigan: *Geol. Soc. Amer. Bull*., v. 95, p. 610-617.

Nishioka, G. K., Kelly, W. C. and Elmore, R.D., 1984, Copper occurrences in stromatolites of the Copper Harbor Conglomerate, Keweenaw Peninsula, northern Michigan: *Econ. Geol*., v. 79, p. 1393-1399.

Goldhammer, R.K. and Elmore, R.D., 1984, Constructive and destructive paleosoils capping regressive carbonate cycles: *Jour. Sed. Pet*., v. 54, p. 1124-1137.

Dunn, William J. and Elmore, R. Douglas, 1985, Paleomagnetic and petrographic study of the Taum Sauk Limestone, SE Missouri: *Journal of Geophysical Research*, v. 90, p. 11,469-11,483.

Elmore, R.D., Dunn, W., and Peck, C., 1985, Absolute dating of a diagenetic event using paleomagnetic analysis: *Geology*, v. 15, p. 558-561.

Loucks, V. and Elmore, R. Douglas, 1986, Absolute dating of dedolomitization and the origin of magnetization in the Morgan Creek Limestone, central Texas: *GSA Bull*., v. 97, p. 486-496.

Peck, C., Elmore, R. Douglas, and DuBois, R.L., 1986, Early and Late Paleozoic remagnetization the Upper Cambrian Peerless Formation, central Colorado: *Phys. Earth Planet. Interiors*, v. 43, 274-282.

Elmore, R.D., Engel, M.H., Crawford, L., Nick, K., Imbus, S, and Sofer, Z., 1987, Evidence for a relationship between hydrocarbons and authigenic magnetite: *Nature*, v. 325, p. 428-430.

Benthien, R.H. and Elmore, R.D., 1987, Origin of magnetization in the Phosphoria Formation at Sheep Mountain, Wyoming: A possible relationship with hydrocarbons: *Geophysical Research Letters*, v. 14, p. 323-326.

Cochran, K.L. and Elmore, R. Douglas, 1987, Absolute dating of Liesegang bands: *Jour. Sed. Petrology*, v. 57, p. 701-708.

Prince, L.H., Elmore, R. Douglas, Ehrlich, R., and Pilkey, O.H., 1987, Aerial and lateral changes in a major trailing margin turbidite - The Black Shell Turbidite: *Geomarine Letters*, v. 7, p. 103-112.

Elmore, R.D., Cochran, K., Crawford, L., and Nick, K., 1988, Paleomagnetism of the Cambro-Ordovician Arbuckle Group and associated deposits in the Southern Oklahoma Aulacogen: Evidence for block rotation: *GRL*, v. 15, p. 380-383.

Fruit, D.J. and Elmore, R.D., 1988, Tide and storm dominated bars on a distal muddy shelf: The Pennsylvanian Cottage Grove Sandstone, NW Oklahoma: *AAPG Bull*., v. 72, p. 1200-1211.

Imbus, S., Engel, M., Elmore, R.D., and Zumberge, J., 1988, The origin, distribution and hydrocarbon generation potential of organic-rich facies in the Nonesuch Formation, Central American Rift System: A regional study: *Organic Geochemistry*, v. 13, p. 207-219.

Elmore, R.D., Milavec, G., Imbus, S., and Engel, M., 1989, The Precambrian Nonesuch Formation of the North American Midcontinent Rift, sedimentology and organic geochemical aspects of lacustrine sedimentation. *Precambrian Geology*, v. 43, p. 191-213.

Kilgore, B. and Elmore, R. Douglas, 1989, Petrographic and magnetic characteristics of Hydrocarbon saturated redbeds: Implications for diagenesis and hydrocarbon exploration: *GSA Bulletin*, v. 101, p. 1280-1288.

McCabe, C. and Elmore, R.D., 1989, The occurrence and origin of Late Paleozoic remagnetization in the sedimentary rocks of North America: Invited paper for *Reviews of Geophysics*, v. 27, no. 4, p. 471-493.

Elmore, R.D., and Leach, M., 1990, Paleomagnetism of the Rush Springs Sandstone, Cement, Oklahoma: Implications for dating hydrocarbon migration, aeromagnetic exploration, and understanding remagnetization mechanisms: *Geology*, v. 18, p. 124-127.

Elmore, R.D. and Crawford, L., 1990, Remanence in authigenic magnetite: Testing the hydrocarbon-magnetite hypothesis. Invited paper for special section of *JGR* on Magnetization Processes in Sediments, v. 95, p. 4539-4549.

Elmore, R.D., Sutherland, P., and White, P., 1990, Middle Pennsylvanian recurrent uplift of the, Ouachita fold belt and basin subsidence in, the Arkoma basin, Oklahoma, Oklahoma: *Geology*, v. 18, p. 906-909.

Nick, K. and Elmore, R. Douglas, 1990, Paleomagnetism of the Cambrian Royer Dolomite and Pennsylvanian Collings Ranch Conglomerate, southern Oklahoma: An Early Paleozoic magnetization and non-pervasive remagnetization by weathering: *GSA Bulletin*, v. 102, p. 1517-1525.

Imbus, S., Engel, M., and Elmore, R.D., 1990, Organic geochemistry and sedimentology of the Middle Proterozoic Nonesuch Formation: Hydrocarbon source rock assessment of a lacustrine rift deposit, in *Lacustrine Basin Exploration: Case Studies and Modern Analogs*, ed. by B. Katz, AAPG Special Volume, p. 197-208.

Elmore, R.D., and McCabe, C., 1991, The origin and occurrence of remagnetization in North America: Invited paper for IUGG report on progress in Paleomagnetism, 1987-1990: *Reviews of Geophysics*, v. 29, p. 317-383.

Nick, K., and Elmore, R.D., 1991, Paleomagnetic and petrographic evidence for early magnetizations in successive terra-rosa paleosols, Lower Pennsylvanian Black Prince Limestone, Arizona: *JGR*, v. 96, p. 9873-9886.

Hillegeist, T.K., Fruit, D.J., and Elmore, R.D., 1992, Syndeformational magnetization in the Ordovician Bigford Chert at Black Knob Ridge, western Ouachita Mountains, southern Oklahoma: *EPSL*, v. 109, p. 531-542.

Gao, Guoqiu, Elmore, R.D., and Land, L.S., 1991, Geochemical constraints on the origin of vein calcite and limestone alteration, the Ordovician Viola Group, Arbuckle Mountains, Oklahoma: *Chemical Geology*, v. 98, p. 257-269.

Imbus, S., Macko, S., Elmore, R.D., and Engel, M.H., Stable isotope (C, S, N,) and molecular studies on the Precambrian Nonesuch shale: Evidence for differential preservation rates, depositional environment, and hydrothermal influences: *Chemical Geology*, v. 101, p. 255-271.

Elmore, R.D., London, D., Bagley, D., and Gao, G., 1993, Remagnetization by basinal fluids: Testing the hypothesis in the Viola Limestone, southern Oklahoma: *JGR*, v. 98, p. 6237-6254.

Elmore, R.D., London, D., Bagley, D., and Gao, G., 1993, Paleomagnetic dating of diagenesis by basinal fluids, Ordovician carbonates, Arbuckle Mountains, southern Oklahoma: In: Aïssaoui, D. M., McNeill, D. F. & Hurley, N. F. (eds) *Applications of Paleomagnetism to Sedimentary Geology*. Society Economic Paleontologists and Mineralogists, Tulsa, Special Publications, 49, p. 115-128.

Elmore, R. D., Imbus, S., Engel, M. & Fruit, D. 1993. Hydrocarbons and magnetizations in magnetite. In: Aïssaoui, D. M., McNeill, D. F. & Hurley, N. F. (eds) *Applications of Paleomagnetism to Sedimentary Geology*. Society Economic Paleontologists and Mineralogists, Tulsa, Special Publications, 49, 181–191.

Elmore, R.D., Gao, G., and Land, L., 1994, Geochemical controls on the origin of secondary magnetizations in the Cambro-Ordovician Royer Dolomite, Arbuckle Mtns., southern Oklahoma: *Physics of Earth and Planetary Science Interiors*, 85, 3-13.

Fruit, D., Elmore, R.D., and Halgedahl, S., 1995, Remagnetization of the Folded Belden Formation, northwest Colorado, *Journal of Geophysical Research*, 100, 15, 009-15024.

Gao, G., Land, L.S., and Elmore, R.D., 1995, Multiple Episodes of dolomitization in the Arbuckle Group, Arbuckle Mountains, south-central Oklahoma: field, petrographic, and geochemical evidence: *Journal of Sedimentary Research*, A65, 321-331.

Plaster-Kirk, Lisa, Elmore, R.D., Engel, M.H., and Imbus, S.W., 1995, Paleomagnetic investigation of organic-rich lacustrine deposits, Middle Old Red Sandstone, Scotland: *Scottish J. Geology*, 31, 97-105.

Brothers, L.A., Engel, M.H., and Elmore, R.D., 1996, A laboratory investigation of the late diagenetic conclusion of pyrite to magnetite by organically complexed ferric iron, *Chemical Geology*, 130, 1-14.

Katz, B., Elmore, R.D., Engel, M.H., and Leythaeuser, D., 1996, Paleomagnetism of the Jurassic Asphaltkalk-deposits, Holzen, northern Germany, *Geophysical Jour. Int*., 127, 305-310.

Gao, G, S. I. Dworkin, L. S. Land, and R. D. Elmore, 1996, Geochemistry of Late Ordivician Viola Limestone, Oklahoma: Implications for Marine Carbonate Mineralogy and Isotopic Compositions, *Journal of Geology*, 104, 359-367.

Banerjee, S., M. Engel, and R. D. Elmore, 1997, Chemical remagnetization and Burial Diagenesis of organic matter: Testing the hypothesis in the Pennsylvanian Belden Formation, Colorado: *JGR*, 102, 24825-24842.

Soreghan, G., R. D. Elmore, B. Katz, and S. Banerjee, 1997, Rock magnetic/sedimentologic proxies for climate change in upper Paleozoic Loessite, *Geology*, 20, 1003-1006.

Ripperdan, R. L., L. Riciputi, D. Cole, R. D. Elmore, S. Banerjee, and M.H. Engel, 1998, SIMS measurement of oxygen isotope ratios in authigenic magnetites from the Belden Formation, Colorado: *JGR*, 103, 21015-21024.

Katz, B., R. D. Elmore, M. Cogoini, and S Ferry, 1998, Widespread chemical remagnetization: Orogenic fluids or burial diagenesis of clays, *Geology*, 26, 603-606.

Bixler, W. G., R. D. Elmore , and M.H. Engel, 1998, The origin of magnetization and geochemical alteration in a basin-bounding Fault Zone, Kilve, England: *Geological Journal*, 33, 89-105.

Katz, B., R. D. Elmore, and M.H. Engel, 1998, Authigenesis of magnetite in organic-rich sediment next to a dike: Implications for thermoviscous and chemical remagnetizations, *EPSL*, 163, 221-234.

Elmore, R. D., Banerjee, S., Campbell, T., and Bixler, G., 1999, Paleomagnetic dating of ancient fluid-flow events and paleoplumbing in the Arbuckle Mountains, Southern Oklahoma: In: Parnell, J., ed., Dating and Duration of Fluid Flow Events and Rock-Fluid Interaction. *Geological Society, London, Special Publications*, 144, 9-25.

Katz, B., R. D. Elmore, M. H. Engel, M. Cogoini, & S. Ferry, 1999, Associations between burial diagenesis of smectite, chemical remagnetization and magnetite authigenesis in the Vocontian Trough of SE-France. *Journal of Geophysical Research*, v. 105, 851-868.

Elmore, R. D., J. Parnell, M. Engel, S. Woods, M. Abraham, and M. Davidson, 2000, Paleomagnetic Dating of fluid-flow events in dolomitized Caledonian basement rocks, central Scotland, *Journal of Geochemical Exploration*, v. 69-70, p. 369-372.

Woods, S., Elmore, R. D., and M. Engel, 2000, The occurrence of pervasive chemical remanent magnetizations in sedimentary basins: Implications for dating burial diagenetic events: *Journal of Geochemical Exploration*, v. 69-70, p. 381-386.

Parnell, J., Baron, M., Davidson, M., Elmore, D., & Engel, M., 2000, Dolomitic breccia veins as evidence for extension and fluid flow in the Dalradian of Argyll. *Geological Magazine*, v. 137, p.447-462.

Davidson, M., J. Egger**,** R. D. Elmore, M. Engel, S. Woods, and M. Abraham, 2000, Orogenic fluids and secondary magnetizations: Testing the relationship in the South Wales coalfield foreland basin, *Journal of Geochemical Exploration*, v. 69-70, p. 581-584.

Evans, M., R. D. Elmore, and M. Lewchuk, 2000, Examining the relationship between remagnetization and orogenic fluids: central Appalachians: *Journal of Geochemical Exploration*, v. 69-70, p. 581-584.

Elmore, R. D., J. Kelley, M. Evans, M. Lewchuk, 2001, Remagnetization and Orogenic Fluids: Testing the hypothesis in the central Appalachians, *Geological Journal International*, 144, 568-576.

Elmore, R. Douglas, 2001, A Review of Paleomagnetic Data on the Timing and Origin of multiple Fluid-Flow Events in the Arbuckle Mountains, Southern Oklahoma, *Petroleum Geoscience*, 7, 223-229.

Cogoini, M., R. D. Elmore, G.S. Soreghan, and M. Lewchuk, 2001, Contrasting rock magnetic characteristics of two upper Paleozoic loessite/paleosol profiles, *Physics and Chemistry of the Earth, 26*, 905-910.

Woods, S., Elmore, R. D., and M. Engel, 2002, Paleomagnetic dating of the smectite-to-illite conversion: testing the hypothesis in Jurassic sedimentary rocks, Skye, Scotland, *Journal of Geophysical Research*, 107, 10.1029/2000JB000053, EPM 2-1-2-12.

Soreghan, G.S., Elmore, R.D., and Lewchuk, M., 2002, Linked sedimentologic-magnetic proxies of paleoclimate in upper Paleozoic loessite (lower Cutler beds, Utah): *Geological Society of America Bulletin*, 114, 1019-1035.

Gill, J.D., Elmore, R. D., and Engel, M.H., 2002, Chemical remagnetization and clay diagenesis: Testing the hypothesis in the Cretaceous sedimentary rocks of northwestern Montana, *Physics and Chemistry of the Earth*, 27/25-31, 1131 - 1139.

Seals, S., Soreghan, G.S., and Elmore, R. D., 2002, Reworked submarine cements in Upper Carboniferous (Pennyslvanian) Algal Mounds of the western Orogrande Basin (New Mexico, USA): Implications for changing seawater chemistry through a glacioeustatic cycle; NMGS, Geology of the White Sands, 167-177.

Lewchuk, M. T., Evans, M., and Elmore, R. D., 2002, Remagnetization signature of Paleozoic sediments from the Patterson Creek Anticline in West Virginia, *Physics and Chemistry of the Earth*, 27, 1141-1150.

Elmore, R. D., J. Parnell, M. Engel, S. Woods, M. Abraham, and M. Davidson, 2002, Paleomagnetic Dating of fluid-flow events in dolomitized Caledonian basement rocks, central Scotland, *Geofluids*, 2, 299-314.

Lewchuk, M. T., Evans, M., and Elmore, R. D., 2003, Synfolding remagnetization and Deformation: Results from Paleozoic sedimentary rocks in West Virginia, *J. Geophysical International*, 152, 266-279.

Elmore, R. D., Blumstein, R., Engel., M., and J. Parnell, 2003, Paleomagnetic Dating of fluid-flow events along the Moine Thrust Zone, Scotland, *J. Geochemical Exploration*, v. 78-79, 45-49.

Evans, M. A, Lewchuk, M.T., and Elmore, R.D., 2003, Strain partitioning of deformation mechanisms in limestones: Examining the relationship of strain and anisotropy of magnetic susceptibility (AMS), *Journal of Structural Geology, 25*, 1525-1549.

Retallack, G. J., Sheldon, N., Cogoini, M., and Elmore, R. D., 2003 Magnetic Susceptibility of early Paleozoic and Precambrian paleosols. *Paleo3*, v. 198, p. 373-380.

Blumstein, A., Elmore, R. D., and Engel, M., 2004, Paleomagnetic Dating of Burial Diagenesis in Mississippian Carbonates, Utah, *J. Geophys. Res.*, v. *109, No. B4, B04101*, 10.1029/2003JB002698

Tramp Tramp, K.L., Soreghan, G.S., and Elmore, R.D., 2004, Integrated sedimentologic, geochemical, and magnetic records of pedogenesis in the Pennsylvanian Maroon Formation loessite: Implications for paleoclimatic interpretations: *Geological Society of America Bulletin, 116*, p. 671-686.

Parnell, J., G. Watt, H. Chen, H. Wycherley, A. Boyce, D. Elmore, R. Blumstein, and M. Engel, 2004, Kaolin polytype evidence for a hot fluid pulse along Caledonian thrusts during rifting of the European Margin, *Mineralogic Magazine*, 68, 419-432.

Lewchuk, M.T., J. Foucher, and R. D. Elmore, 2004, Paleomagnetism of the Mesozoic Asik Mountain Mafic Complex in Northern Alaska: Implications for the Tectonic History of the Arctic Composite Terrane, *Econ. Geology*, 99, 1345-1354

Blumstein, R. D., R. D. Elmore, M. H. Engel, J. Parnell, and M. Baron, 2005, Date and Origin of Multiple Fluid Flow Events Along the Moine Thrust Zone, Scotland, *J. Geological Society of London*, 162, 1031-1045.

Dulin, S., R. D. Elmore, M. H. Engel, J. Parnell and J. Kelly, 2005, Paleomagnetic dating of clastic dykes in Proterozoic basement, northwest Scotland: Evidence for syndepositional faulting during deposition of the Torridonian, *Scot. J. Geology*, 41, 149-157.

Cox, E, R. D. Elmore, and M. Evans, 2005, Paleomagnetism of Devonian Red Beds in the Appalachian Plateau and Valley and Ridge Provinces, *JGR*. V. 110, B08102. doi:10.1029/2005JB003640.

Evans, M. A, and Elmore, R.D., 2006, Fluid control of localized mineral domains in limestone pressure solution structures, *Journal of Structural Geology*, 28, 284-301.

O'Brien, V. J., Elmore R. D., and Engel, M., 2006, Timing and Origin of Orogenic Remagnetizations in Mississippian Carbonates, Sawtooth Range, Montana. Geofluids V volume, *J. Geochem. Exploration*, 89. 297-301.

Elmore, R. Douglas, Dulin, Shannon, Engel, Michael H., and Parnell, John, 2006, Remagnetization and fluid flow in the Old Red Sandstone along the Great Glen Fault, Scotland. Geofluids V volume, *J. Geochem. Exploration*, 89, 96-99.

Elliott, W. C., Osborn, S., O'Brien, V., Elmore, R. D., Engel, M.H., and Wampler, M., 2006, A Comparison of K-Ar Ages of Diagenetic Illite and the Age Implications of a Remagnetization in the Cretaceous Marias River Shale, Disturbed Belt, Montana. Geofluids V volume, *J. Geochem. Exploration*, 89. 92-95.

Elliott, W. E., A. Basu, J. M. Wampler, R. D. Elmore, G. Grathoff, 2006, Comparison of K-Ar Ages of Diagenetic Illite-Smectite to the Age of a Chemical Remanent Magnetization (CRM): An Example from the Isle of Skye, Scotland, *Clays and Clay Minerals*, 54, 314-323.

Elmore, D., Foucher, J., Evans, M., Lewchuk, M., and Cox, E., 2006, Remagnetization of the Tonoloway Fm. and Helderberg Gr. in the Central Appalachians: Testing the origin of syntilting magnetizations, *GJI*, 166, 1062-1076.

G. S. Soreghan, D. E. Sweet, K. R. Marra, C. F. Eble, M. J. Soreghan, R. D. Elmore, S. A. Kaplan, M. D. Blum, 2007, The age of the Unaweep Canyon: A Paleozoic landscape in the rock Mountains, *Journal of Geology, 115*, 473–481.

O'Brien, V. J., K. M. Moreland, R. D. Elmore, M. H. Engel, and M. A. Evans (2007), Origin of orogenic remagnetizations in Mississippian carbonates, Sawtooth Range, Montana, *J. Geophys. Res.*, 112, B06103, doi:10.1029/2006JB004699.

Elmore, R. D., and S. Dulin (2007), New paleomagnetic age constraints on the Decaturville impact structure and Weaubleau structure along the 38th parallel in Missouri (North America), *Geophys. Res. Lett*., 34, L13308, doi:10.1029/2007GL030113.

Harms, B., R. D. Elmore and M. H. Engel, 2008, Inferring climate change from stable isotope compositions of ancient speleothems on Earth: implications for climatic reconstructions elsewhere in the solar system, in Instruments, Methods, and Missions for Astrobiology XI, ed. by R. Hoover, G. Levin, A. Rozanov, and P. Davies, Proceedings of SPIE(Intl. Assoc. for Optical Engineering), 0277-786X, v. 7097, pp. 70970B-1-T0970B-12. Invited paper.

Dulin, S and Elmore, R. D., 2008, Paleomagnetism of the Weaubleau-Osceola structure, southwestern Missouri, in Evans, K. R. Horton, J. W. Jr., King, D. T., Jr., and Marrow, J.R., eds., *The Sedimentary Record of Meteorite Impacts*: Geological Society of America Special Paper 437, 55-64. doi: 10.1130/2008.2437(04).

Soreghan, G. S., D. E. Sweet, K. R. Marra, C. F. Eble, M. J. Soreghan, R. D. Elmore, S., A. Kaplan, M. D. Blum, 2009, The age of the Unaweep Canyon: A Paleozoic landscape in the Rocky Mountains, Reply, *Journal of Geology*, 117, 215–220.

Palmer, M.H., R. D. Elmore, Mary Jo Watson, K. Kloesel, and K. Palmer, 2009, *Xoa:dau* to *Maunkaui:* Integrating Indigenous Knowledge into an Undergraduate Earth Systems Science Course, *Journal of Geological Education*, 57, 137-144.

Elmore, R.D., Engel, M.H. Elmore, M., Engel, D., Hood, R., and Parnell, J., 2010, Paleomagnetic Dating Of Fracturing Using Breccia Veins In Durness Group Carbonates, NW Scotland, *Structural Geology*, 10.1016/j.jsg.2010.05.011.

Cullen, A., M. Zechmeister, R.D. Elmore, and S. Pannalal, 2012, Paleomagnetism of the Crocker Formation, NW Borneo: Implications for Late Cenozoic Tectonics, *Geopshere*, doi:10.1130/GES00750.1.

Evans. S., R. D. Elmore, D. Dennie, & S. Dulin, 2012, Remagnetization of the Alamo Breccia, Nevada. *In*: Elmore, R. D., Muxworthy, A. R., Aldana, M. & Mena, M. (eds) *Remagnetization and Chemical Alteration of Sedimentary Rocks.* Geological Society, London, Special Publications, 371, first published online 22 August 2012, http://dx.doi.org/10.1144/SP371.8

Dennie, D., R. D. Elmore, J. Deng, E. Manning & Johari Pannalal, 2012, Palaeomagnetism of the Mississippian Barnett Shale, Fort Worth Basin, Texas. *In*: Elmore, R. D., Muxworthy, A. R., Aldana, M. & Mena, M. (eds) *Remagnetization and Chemical Alteration of Sedimentary Rocks.* Geological Society, London, Special Publications, 371, first published online 22 August 2012, http://dx.doi.org/10.1144/SP371.10

Zechmeister, M.S., S. Pannalal, & R.D. Elmore, 2012, A multidisciplinary investigation of a complex remagnetization within the Southern Canadian Cordillera, SW Alberta and SE British Columbia. *In*: Elmore, R. D., Muxworthy, A. R., Aldana, M. & Mena, M. (eds) *Remagnetization and Chemical Alteration of Sedimentary Rocks*. Geological Society, London, Special Publications, 371, first published online 22 August 2012, http://dx.doi.org/10.1144/SP371.11

Manning, E. & R. D. Elmore, 2012, Rock magnetism and identification of remanence components in the Marcellus Shale, Pennsylvania. *In*: Elmore, R. D., Muxworthy, A. R., Aldana, M. & Mena, M. (eds) *Remagnetization and Chemical Alteration of Sedimentary Rocks*. Geological Society, London, Special Publications, 371, first published online 3 September 2012, http://dx.doi.org/10.1144/SP371.9

Elmore R. D.,Muxworthy, A.R., & Aldana, M., & Mena, M. 2012. Remagnetization and Chemical Alteration of Sedimentary Rocks. *In*: Elmore, R. D., Muxworthy, A. R., Aldana, M. & Mena, M. (eds) *Remagnetization and Chemical Alteration of Sedimentary Rocks*, Geological Society, London, Special Publications 371, first published online 7 November 2012, http://dx doi 10.1144/SP371.15.

Miller MA, Madden AS, Elwood Madden ME, Elmore RD (2013) Laboratory synthesis of iron-rich 10Å clays from nontronite: implications for magnetite authigenesis, *Clays and Clay Minerals*, v. 60, p. 616-632, doi: 10.1346/CCMN.2012.0600607.

Foster, M. T., Gerilyn S Soreghan, Michael J Soreghan, Kathleen C Benison, Richard D Elmore, 2014, Climatic and Palaeogeographic Significance of Aeolian Sediment in the Middle Permian Dog Creek Shale (Midcontinent U.S), *Palaeogeography, Palaeoclimatology, Palaeoecology*, 402, 12-29.

Osborn. S.G. L. Totten Duffield, W. C. Elliott, J. M. Wampler, R. Douglas Elmore, and M. H. Engel. 2014, The timing of diagenesis and thermal maturation of the Cretaceous Marias River Shale, Disturbed Belt, Montana, *Clays and Clay Minerals*, v. 62, p. 112-125, doi:10.1346/CCMN.2014.0620204.

Manning, E. and R. D. Elmore, 2015, An Integrated Paleomagnetic, Rock Magnetic, and Geochemical Study of the Marcellus Shale in the Valley and Ridge province in Pennsylvania and West Virginia, JGR – Solid Earth, v. 120, 705-724, doi:10.1002/2014JB011418.

Hamilton, M. E., Elmore, R. D., Weaver, B., Dulin, S., and Jackson, J., 2015, Paleomagnetic and petrologic study of the origin of early and late Paleozoic events in the Long Mountain Granite, Wichita Mountains, Oklahoma. GSA Bulletin, v. 128, 187-202, doi:10.1130/B31277.1

Elmore, R. D., Heij, G., Wickard, A. (2016). Paragenesis of mineralized fractures and Diagenesis of prominent North American Shales. *Sedimentary Record, 14*, 2-10. SEPM.org.

Elmore, R. D., Haynes, J., Farzaneh, S., Anzaldua, S. (2017). Integrated paleomagnetic and diagenetic study of the Mississippian Limestone, North Central Oklahoma. AAPG Memoir 116, 116. DOI:10.1306/13632156M11667.

Roberts, J., Elmore, R. D., 2018, A diagenetic study of the Woodford Shale in the southeastern Anadarko Basin, Oklahoma, USA: Evidence for hydrothermal alteration in mineralized fractures. Interpretation, 6(1), SC1-SC13. doi.org/10.1190/INT-2017-0071.1.

Weber, J. C., Elmore, D., Hamilton, C, Alder, A., Pope, M., Koeberl, C, 2018, On the Backs of Giants – Geology of the Kentland Impact Structure, Newton County (Kentland) Quarry, Indiana (USA) – Building on Ray Gutschick's Legacy, in The Geological Society of America Field Guide 51, p1-15.

Kondas, M., Filipiak, P., Paszkowski, M., Pisarzowska, A., Elmore, R. D., Jelonek, I., and Kasprzyk, M., 2018, The organic matter composition of the Devonian/Carboniferous deposits (South Flank of Arbuckle Anticline, Oklahoma, USA), International Journal of Coal Geology, v. 198, p. 88-99, ISSN 0166-5162, https://doi.org/10.1016/j.coal.2018.08.010

Roberts, J., Heij, G., and Elmore, R. Douglas., 2019, A diagenetic study of the Woodford Shale in the southeastern Anadarko Basin, Oklahoma, USA: Evidence for hydrothermal alteration in mineralized fractures. Geological Magazine, 1-10. DOI: https://doi.org/10.1017/S0016756819000360

Steullet, A. K., R. Douglas Elmore, Matt Hamilton and Gerhard Heij, 2019, Remagnetization of Marcellus Formation in the Plateau Province of the Appalachian Basin, Front. Earth Sci., 19 July 2019 | https://doi.org/10.3389/feart.2019.00185

In press

Heij, G. and Elmore, R. D., 2018, THE MAGNETIC FABRIC OF THE WOLFCAMP SHALE, MIDLAND BASIN, WEST TEXAS: UNDERSTADING PETROFABRIC VARIABILITY, HYDROCARBON DISTRIBUTION AND IRON ENRICHMENT, AAPG Bulletin, (in press).

Wickard, A., Heij, G., Elmore, R. D. (2018). Diagenetic Study of the Wolfcamp Shale, Midland Basin, West Texas. AAPG Memoir (in press)

Reports, Extended Abstracts, and Other Articles

Briggs, L.I., Briggs, D.Z., Elmore, Douglas, and Gill, Dan, 1978, Stratigraphic facies of carbonate platform and basinal deposits, Late Middle Silurian, Michigan Basin: in North-central Section Geol. Soc. America, Fieldtrip Guidebook, R.V. Kesling, editor, p. 117-131.

Briggs, L.I. and Elmore, R.D., 1980, Lithologic examination of cores and well cuttings from the Antrim Shale: U.S. Dept. of Energy, FE-2346-82, Dist. Cat. UC-91, Technical Report.

Elmore, R. Douglas, Engel, M. and Daniels, P., 1988, The Nonesuch Formation: lacustrine sedimentation in a Precambrian rift basin: in Upper Keweenawan Rift Fill Sequence, Mid-Continent Rift, Michigan, Michigan Basin Geological Society Field Guidebook, 1988,p. 105-134.

Daniels, P. and Elmore, R. Douglas, 1988, Overview: in Upper Keweenawan Rift Fill Sequence, Mid-Continent Rift, Michigan, Michigan Basin Geological Society Field Trip Guidebook, 1988, 1-27.

Meek, F., Elmore, R.D., and Sutherland, P., 1988, The lithostratigraphy and depositional environments of the Spring and Lower Golf Course Formations in the Ardmore Basin, Oklahoma: GSA DNAG Centennial Field Guide, Vol. 4, p. 189-192.

Elmore, R.D., McCollum, R., and Engel, M.H., 1989, Evidence for a relationship between hydrocarbon migration and diagenetic magnetic minerals: Implications for petroleum exploration: Association of Petroleum Geochemical Explorationists Bulletin, v. 5, p. 1-17.

Elmore, R.D., 1991, Remagnetization and fluids: Geophysics News, p. 23-24.

Fruit, D.J., Nick, K.E., Cullen, A., and Elmore, R.D., 1989, Sandy tempestites in the Lower/Middle Atoka Formation, southeastern Oklahoma: in Geology and Resources of the Frontal Belt of the western Ouachita Mountains, Oklahoma, N. Suneson, J. Campbell, and M. Tilford (eds.), Field Trip 2 Guidebook, AAPG Mid-continent, 1989, p. 155-168.

Donovan, R.N., Bushey, A.B., Elmore, R. Douglas, and Engel, M.H., 1992, Oil in Permian karst in the Slick Hills of southwestern Oklahoma in Source Rocks in the Southern Midcontinent,1990 Symposium, Oklahoma Geol. Survey Circular 93, p. 198-209.

Bagley, D., London, D., Fruit, D., Cates, K.D., and Elmore, R.D., 1992, Paleomagnetic dating of basinal fluid migration, base-metal mineralization, and hydrocarbon maturation in the Arbuckle Mountains, Oklahoma in Source Rocks in the Southern Midcontinent, 1990 Symposium, edited by K. Johnson and B. Cardott, Oklahoma Geol. Surv. Circular 93, p.289-298.

Elmore, R.D., Bixler, G., Plaster-Kirk, L., Andrusevich, V., Jumberge, J.E., and Engel, M.H., Application of Paleomagnetism for Dating hydrocarbon migration Events: Case Studies in Northern Scotland and Southern England: In: Organic Geochemistry: Developments and applications to energy, climate, environment and human history, edited by J. Grimalt and C. Dorronsoro, 17th International Meeting on Organic Geochemistry Donostia-San Sebastian, The Basque Country, Spain: AIGOA., p. 278-279.

Brothers, L., Engel, M.H., and Elmore, R.D., The role of organic ligands in the diagenetic transformation of pyrite to magnetite in organic-rich carbonates: Experimental Studies, In: Organic Geochemistry: Developments and applications to energy, climate, environment and human history, edited by J. Grimalt and C. Dorronsoro, 17th International Meeting on Organic Geochemistry, Donostia-San Sebastian, The Basque Country, Spain: AIGOA, p. 290-291, 1995.

Campbell, T., Bixler, G., Kar, A., and Elmore, D., 1995, A Paleomagnetic study of the Colbert Rhyolite and Reagan Sandstone, Arbuckle Mountains, Southern Oklahoma Aulacogen, in Arbuckle Mountains Field Trip, 12th International Conference on Basement Tectonics, ed. by R. Denison and E. Lidiak, p. 14-16.

Billingsley, P., Banerjee, S., Elmore, R.D., Sutherland, P.K., and Grayson, R.C., 1996, Fluvial-deltaic facies patterns in the Lower Deese Group (Middle Pennsylvanian), Ardmore Basin, Oklahoma: Oklahoma Geol. Survey Circ. 98, 240-248.

Cogoini, M., and R. D. Elmore, 1997, Monitoring hydrocarbon contamination and bioremediation by soil magnetic susceptibility, The 3rd International Petroleum Environmental Conference, Proceedings, Penwall Publishing, p. 487-506.

Banerjee, S. and R. D. Elmore, 1997, Chemical Remagnetization Related to Maturation of Organic Matter, Geofluids II Conference Proceedings, 2-5.

Elmore, R. D., T. Campbell, and W.G. Bixler, 1997, Paleomagnetic dating of ancient fluid-flow events and paleoplumbing in the Arbuckle Mountains, Southern Oklahoma: Geofluids II Conference Proceedings, 14-17.

Hamilton, M., R. D. Elmore, B. Weaver, and S. Dulin, 2012, Paleomagnetic and Petrologic investigation of Long Mountain Granite, Wichita Mountains, Oklahoma. Abstract volume, GEOFLUIDS VII – International Conference IFP Energies nouvelles, Rueil-Malmaison (France), June 6-8, 2012, 79-82.

Manning E., Elmore, R. D., and Evans, M., 2012, Origin and timing of diagenetic events in the Marcellus Subgroup in the Appalachians Abstract volume, GEOFLUIDS VII – International Conference IFP Energies nouvelles, Rueil-Malmaison (France), June 6-8, 2012, 79-82.

Dulin, S. and Elmore, R. D., 2012, Remagnetization of Zebra dolomite within the Delamar Range, Basin and Range Province, Nevada, USA. Abstract volume, GEOFLUIDS VII – International Conference IFP Energies nouvelles, Rueil-Malmaison (France), June 6-8, 2012, 217-221.

Hamilton, M., D. Elmore, B. Weaver, and S. Dulin. 2014, Petrology and paleomagnetism of the Long Mountain Granite, Wichita Mountains, Oklahoma, in Igneous Rocks of the southern Oklahoma Aulacogen, OGS guidebook 38, 319-326.

PUBLICATIONS - Selected Abstracts last eight years (Does not include 212 published Abstracts between 1975 and 2010)

Athone, H., Elmore, R. D., Watson, M.J., Kloesel, K., and Palmer, M., 2010, Native American Culture and Materials as a Conduit to Learning Earth Systems Science, 2010 Creativity World Forum. Oklahoma City.

Dennie, D. Pannalal, S. J., Elmore, R. D., 2010, Paleomagnetism of the Ordovician Ellenburger Group Carbonates and Mississippian Barnett Shale, Fort Worth Basin: Preliminary Results, AAPG meeting, New Orleans, 2010.

Evans, S., Dennie, D., Dulin, S., Elmore, R. D., 2010, The Alamo Breccia as a Conduit for Remagnetizing Fluids: Testing the Hypothesis, AAPG meeting, New Orleans, 2010.

Deng, J., D. Dennie, R. D. Elmore, S. Pannalal, E. Manning, 2010, Paleomagnetism and diagenesis of the Mississippian Barnett Shale, Fort Worth Basin, Texas, Eos Trans. AGU, 91(26), Jt. Assem. Suppl., Abstract GP24B-01, The Meeting of the Americas, Foz do Iguaçu, Brazil.

Elmore, R. D., D. Dennie, S. Pannalal, M. S. Zechmeister, 2010, Integrated Diagenetic and Paleomagnetic Studies of Remagnetization (Invited), AGU, The Meeting of the Americas, August, 2010, Foz do Iguaçu, Brazil. Eos Trans. AGU, 91(26), Jt. Assem. Suppl., Abstract GP24B-05, The Meeting of the Americas, Foz do Iguaçu, Brazil.

Manning, E., S. Pannalal, S. Anzaldua, R. D. Elmore, 2010, A Paleomagnetic Study of the Marcellus Shale, Appalachian Valley and Ridge Province, Pennsylvania, United States, Eos Trans. AGU, 91(26), Jt. Assem. Suppl., Abstract GP41A-04, The Meeting of the Americas, Foz do Iguaçu, Brazil.

Evans, S., S. Dulin, S. Pannalal, J. E. Warme, R. D. Elmore, 2010, Testing fluids as a remagnetization mechanism in the Alamo Breccia, Nevada, Eos Trans. AGU, 91(26), Jt. Assem. Suppl., Abstract GP24B-04, The Meeting of the Americas, Foz do Iguaçu, Brazil.

Zechmeister, M., M. Evans, E. C. Ferre, R. D. Elmore, 2010, Structural complications associated with paleomagnetic analysis of fault related folds (Front Ranges, Canadian Cordillera): Implications for the origin of syntilting remagnetizations, AGU, 91(26), Jt. Assem. Suppl., Abstract GP23A-03, The Meeting of the Americas, Foz do Iguaçu, Brazil.

Montalvo, L., Manning, E. B., and Elmore, R. D., 2010, Diagenetic History Of The Ellenburger Group In The Fort Worth Basin, Texas, Geological Society of America *Abstracts with Programs*, Vol. 42, No. 5, p. 294

Manning, E.B., S. J. Pannalal, D. P. Dennie, J. C. Deng, M. S. Zechmeister, and R. D. Elmore,

2010, Sulfate and Silicate Diagenetic Mineralization in the Barnett Shale, Texas, AAPG International Convention and Exhibition, September 12-15, 2010, Calgary, Alberta, Canada
http://www.searchanddiscovery.com/abstracts/pdf/2010/intl/abstracts/ndx_manning.pdf

Dulin, S. A., R. D. Elmore, D. P. Dennie, S. C. Evans, P. Mulvany, 2011, Paleomagnetic Investigations of the Decaturville, MO, and Sierra Madera, TX, Impact Structures, 42nd Lunar and Planetary Science Conference (2011), Abstract #1120.

Manning, E., Pannalal, S. J, Anzaldua, S., R., Elmore, R. D., and Evans, M., 2011, An Integrated Paleomagnetic And Diagenetic Study Of The Marcellus Shale, Appalachian Valley And Ridge Province, Pennsylvania Northeastern and North-Central Joint Meeting (20–22 March 2011), Paper No. 56-5.

Deng, J., Harms, B., Dennie, D., Manning, E., And Elmore, R. D., 2011, Integrated Diagenetic Study Of The Mississippian Barnett Shale, Fort Worth Basin, Texas, Geological Society of America *Abstracts with Programs*, Vol. 43, No. 5, p. 655.

Hamilton, M., R. D. Elmore, and B. Weaver, 2011, Paleomagnetic and Petrological Investigation of Long Mountain Granite, Wichita Mountains, Oklahoma, Oklahoma Geological Society of America *Abstracts with Programs*, Vol. 43, No. 5, p. 146

Hamilton, M., R. D. Elmore, and B. Weaver, 2011, Primary and Secondary Magnetizations in the Long Mountain Granite, Wichita Mountains, Oklahoma, Eos Trans. AGU, 91(26), Jt. Assem. Suppl., Abstract GP51A-1158.

Thiel, A., S. Farzaneh and R. D. Elmore, 2011, Testing the Origin of Syntilting Chemical Remanent Magnetizations in the Phosphoria Formation, Sheep Mountain, Wyoming, and the Belden Formation, Sweetwater Anticline, Colorado, Using Low Temperature Demagnetization, Eos Trans. AGU, 91(26), Jt. Assem. Suppl., Abstract GP51A-1159.

Dulin, S. and R. D. Elmore, 2011, Paleomagnetism of clastic dikes along the Front Range, Colorado, Eos Trans. AGU, 91(26), Jt. Assem. Suppl., Abstract GP54A-08.

Manning, E. and R. D. Elmore, 2011, An Integrated Paleomagnetic, Rock Magnetic, and Geochemical Study of the Marcellus Shale in the Valley and Ridge Province in Pennsylvania and West Virginia Eos Trans. AGU, 91(26), Jt. Assem. Suppl., Abstract, GP54A-09.

Miller, M., S. Dulin, A. Madden, and R. D. Elmore, 2012, Magnetic Properties of Source Clays: Rock magnetic Implications, Goldschmidt 2012 session 23b "Geochronology: The role of Fluids".

Dulin, S. and R. D. Elmore, 2012, Paleomagnetic and Petrographic investigation of clastic dikes in the Pikes Peak Granite, Front Range, Colorado. Geological Society of America Abstracts with Programs. Vol. 44, No. 7, p. 36.

Dulin, S. and R. D. Elmore, 2013, Clastic dikes within the Pikes Peak Granite of the Front Range, Colorado: Using paleomagnetism to constrain age of emplacement. Geological Society of America Abstracts with Programs. Vol. 45, No. 7, p.811.

Dulin, S. and R. D. Elmore, 2013, Chemical remanent magnetization associated with paleo-Weathering. Geological Society of America Abstracts with Programs. Vol. 45, No. 7, p.513.

Elmore, R. D., Haynes, J., Farzaneh, S., Dennie, D., Deng, J., 2013, Paleomagnetic and

diagenetic studies of reservoir rocks in cores. Geological Society of America Abstracts with Programs. Vol. 45, No. 7, p.513.

Benton, A and Elmore, R. D., 2013, Integrated paleomagnetic and diagenetic study of the Haynesville Shale, Texas. Geological Society of America Abstracts with Programs. Vol. 45, No. 7, p.512.

Elmore, R. D. and Dulin, S., 2013, Secondary magnetization of zebra dolomites in the Basin and Range Province of eastern Nevada. Fall American Geophysical Meeting, GP41A-1114.

Dulin, S. and R. D. Elmore, 2013, Paleomagnetic dating of paleo-weathering surfaces, North America and Scotland, Fall American Geophysical Meeting, GP41A-1110.

Steullet, A. and Elmore, R. D., 2014, Constraining the Timing and Origin of Diagenetic Events in the Marcellus Shale; an Integrated Petrographic and Paleomagnetic Approach, Geological Society of America Abstracts with Programs. Vol. 46, No. 2, p. 98.

Dulin, S. and R. D. Elmore, 2014, Paleomagnetic record of climate conditions during the Permo-Triassic, Geological Society of America Abstracts with Programs. Vol. 46, No. 6, p.488.

Roberts, Jennifer and R. D. Elmore, 2014, A paleomagnetic and diagenetic study of the Woodford Shale, Oklahoma, Geological Society of America Abstracts with Programs. Vol. 46, No. 6, p.270.

Steullet, A. and Elmore, R. D., 2014, An integrated Diagenetic and Paleomagnetic Study of the Marcellus Shale within the Plateau Province of the Appalachian Basin, Geological Society of America Abstracts with Programs. Vol. 46, No. 6, p.270.

Wierman, C., Elmore, R. D., Evans, S., Heij, G. (2015). *Paleomagnetism of Cambrian Carlton (Colbert) Rhyolite, Arbuckle Mountains*, South Central GSA Meeting, 2015, Vol. Geological Society of America Abstracts with Programs. Vol. 47, p.142015. Stillwater, OK:

Elmore, R. D., Haynes, J., Farzaneh, S., Anzaldua, S. (2015). *Integrated Diagenetic and Paleomagnetic Study of the Mississippian Limestone, North Central Oklahoma*, AAPG 2015. Denver, CO:

Wickard, A., Heij, G., Elmore, R. D., Roberts, J. (2015). *A DIAGENETIC STUDY OF THE LOWER WOLFCAMP SHALE, MIDLAND BASIN, TEXAS: WHAT CAN DETAILED PETROGRAPHIC AND MAGNETIC STUDIES TELL US ABOUT PARAGENESIS IN THIS COMPLEX SYSTEM?*, Geological Society of America Abstracts with Programs, Vol. 47, 507. Denver, CO.

Elmore, R. D., Manning, E., Steullet, A., Roberts, J. (2015). *ORIGIN OF CHEMICAL REMAGNETIZATIONS IN SHALES*, Geological Society of America Abstracts with Programs, Vol. 47, 402.

McGraw, L., Roberts, J., Van Deventer, S., Carnine, C., Khawaja, S., and Elmore, R. D. (2015). *STUDENT-LED OUTREACH AT THE UNIVERSITY OF OKLAHOMA*, Geological Society of America Abstracts with Programs, Vol. 47, 618.

Heij, G., Elmore, R. D., Roberts, J., Steullet, A., Rose, D., Dulin, S. (2015). *THE MAGNETIC FABRIC OF NORTH AMERICAN SHALES: INSIGHTS INTO DIAGENETIC AND BURIAL PROCESSES*, Geological Society of America, Vol. 47, 222. Denver.

Heij, G., Elmore, R. D., Roberts, J., Steullet, A., Dulin, S. A. *A petrofabric tool to measure fabric anisotropy across shale units*, UrTec. San Antonio, TX.

Heij, G., Elmore, R. D., Roberts, J., Steullet, A., Dulin, S. A. (2015). *Origin of Anomalous Magnetic Fabrics in the Woodford and Marcellus Shales*, AAPG 2015. Denver, CO.

Elmore, R. D., Dulin, S. A., Manning, E., Steullet, A., Benton, A., Dennie, D., Roberts, J., Heij, G. (2015). *Paragenesis of Mineralized Fractures in Organic Rich Shales*, AAPG 2015. Denver, CO.

Schwing, J. E., Evans, S., Elmore, R. D., Engel, M. H., Hein, B. (2016). *Alteration of basement rocks in Oklahoma by fluid interactions* (pp. 201-3). GSA Annual Meeting, Abstracts with Programs 48 10.1130/abs/2016AM-286362.

Heij, G., Elmore, R. D., Wickard, A., Steullet, A., Roberts, J., Rose, D., Dennie, D., Benton, A., Manning, E. (2016). *DIAGENESIS OF PROMINENT NORTH AMERICAN MUDROCKS DOCUMENTED BY PALEOMAGNETISM, MAGNETIC FABRICS AND PARAGENESIS*. GSA. doi: 10.1130/abs/2016AM-280773.

Elmore, R. D., Wickard, A., Heij, G., Curtis, M. E., Sondergeld, C. H., Rai, C. S. (2016). *Paragenesis of Mineralized Fractures in the Wolfcamp Shale* (#90283 ed., vol. #90283). 016 SEPM – AAPG Hedberg Research Conference, Mudstone Diagenesis, Santa Fe, New Mexico, October 16-19, 2016.

Heij, G., Elmore, R. D., Roberts, j., Steullet, A., Dennie, D. (2016). *Spatial-temporal Boundaries of Shale Diagenesis Inferred from Magnetic Fabrics and Paleomagnetism* (#90283 ed., vol. #90283). 016 SEPM – AAPG Hedberg Research Conference, Mudstone Diagenesis, Santa Fe, New Mexico, October 16-19, 2016.

Wickard, A., Heij, G., Elmore, R. D. (2016). *A Diagenetic Study of the Wolfcamp Shale, Midland Basin, West Texas*. SEG. DOI 10.15530-urtec- 2016-2460784. (Published)

Wickard, A., Heij, G., Elmore, R. D. (2016). *A Diagenetic Study of the Wolfcamp Shale, Midland Basin, West Texas* (vol. #90259). 2016 AAPG Annual Convention and Exhibition, Calgary, Alberta, Canada, June 19-22, 2016.

Heij, G., Turner, B., Elmore, R. D. (2016). *An Integrated Chemostratigraphic and Magnetic Study of the Wolfcamp Formation, Midland Basin, Texas: What Can These Tools Tell Us About Sequence Stratigraphy and Fabric Anisotropy?* (vol. #90259). 2016 AAPG Annual Convention and Exhibition, Calgary, Alberta, Canada, June 19-22, 2016.

Heij, G., Turner, B., Wickard, A., Elmore, R. D. (2016). *Quantitative Facies Characterization of the Wolfcamp Shale, Midland Basin Using Anisotropy of Magnetic Susceptibility and Hand-held X-Ray Fluorescence*. SEG. DOI 10.15530-urtec- 2016-2460784.

Roberts, R. Douglas Elmore, Gerhard Heij, Richard Brito, Shannon Dulin, Grant Heard and Shanmugam J. Pannalal, 2017, A Diagenetic and Paleomagnetic Study of the Woodford Shale, Oklahoma, AAPG Datapages/Search and Discovery Article #90291 ©2017 AAPG Annual Convention and Exhibition, Houston, Texas, April 2-5, 2017

Roberts, J. and Elmore, D. (2017). *A Paleomagnetic and Diagenetic Study of the Woodford Shale, Oklahoma, U.S.A.: The Timing of Hydrothermal Alteration* (pp. GP14A-06] presented at 2017 Fall Meeting, AGU, New Orleans, LA, 11-15 Dec.). AGU. (Published)

Heij, G., Elmore, R. D., Roberts, J. (2017). *The Magnetic Fabric and Paleomagnetism of North American Mudrocks: A record of Diagenetic, Tectonic and Hydrothermal processes* (GP23A-0911] presented at 2017 Fall Meeting, AGU, New Orleans, LA, 11-15 Dec. ed.). AGU. (Published)

Hamilton, M., Evans, S., H,, M., D., R. (2017). *EVIDENCE FOR DEEP FLUID PENETRATION INTO THE PRECAMBRIAN BASEMENT, OKLAHOMA* (Abstract 191-2 ed.). Geological Society of America Abstracts with Programs. Vol. 49, No. 6: GSA. doi: 10.1130/abs/2017AM-303870. (Published)

Evans, S., M., J., C., D., R. (2017). *Paleomagnetism and alteration of lower Paleozoic rocks and Precambrian basement in the SHADS No. 4 drill core, Oklahoma* (GP23A-0910 ed., pp. presented at 2017 Fall Meeting, AGU, New Orleans, LA, 11-15 Dec.). AGU. (Published)

Hamilton, C., Evans, S., Elmore, R. D., Engel, M., Parnell, J. (2017). *PALEOPLUMBING AND REMAGNETIZATION ALONG FAULTS IN SCOTLAND* (Abstract [218-4] ed.). Geological Society of America Abstracts with Programs. Vol. 49, No. 6 doi: 10.1130/abs/2017AM-301624. (Published)

Adams, G., Dulin, S., Elmore, R. D., Spencer, B., Schwing, J. (2017). *TIMING OF DOLOMITIZING FLUIDS IN ZEBRA DOLOMITE BODIES OF NEVADA'S BASIN AND RANGE PROVINCE* (Abstract [218-4] ed.). Geological Society of America Abstracts with Programs. Vol. 49, No. 6 doi: 10.1130/abs/2017AM-306056. (Published)

Roberts, J., Elmore, D. (2017). *Evidence of Hydrothermal Alteration in the Woodford Shale – Anadarko and Ardmore Basins, Oklahoma* (Search and Discovery Article #90309 ed.). Regional AAPG Meeting, Oklahoma City. (Published)

Molinares Blanco, C. E.; Turner, B. W.; Slatt, R. M.; Kozik, N. P.; Young, S. A.; Philp, R. P., Elmore, D. Miceli-Romero, A., Etayo-Cadavid, M. F., 2018, LATE DEVONIAN ORGANIC-RICH WOODFORD SHALE DEPOSITS AND THE FRASNIAN/FAMENNIAN (F/F) AND DEVONIAN-CARBONIFEROUS (D/C) GLOBAL ANOXIC EVENTS. Geological Society of America Abstracts with Programs. Vol. 50, No. 1, doi: 10.1130/abs/2018SC-310250

Forrest, R. W. and Elmore , R. D., 2018, PALEOMAGNETIC AND MAGNETIC FABRIC INVESTIGATION OF THE FAYETTEVILLE SHALE, AR, Geological Society of America Abstracts with Programs. Vol. 50, No. 1 doi: 10.1130/abs/2018SC-310006

Hamilton, M. and Elmore, R. D., 2018, ANCIENT FAULT-FLUID INTERACTIONS IN NORTHERN OKLAHOMA, Geological Society of America Abstracts with Programs. Vol. 50, No. 6, doi: 10.1130/abs/2018AM-324719

Hamilton, C., Elmore, R. D., Weber, J., Alder, A., and Miller, R., 2018, Re-examination of the Kentland Impact Crater (Indiana, USA): diagenetic, paleomagnetic, and structural analysis (Invited) Geological Society of America Abstracts with Programs. Vol. 50, No. 6 doi: 10.1130/abs/2018AM-322189,

Richmond, D. and Elmore, R. D., 2018, SHAKE, RATTLE, AND ROLL: LATE JURASSIC EARTHQUAKE RECORDED IN MORRISON FORMATION FLUVIAL SEDIMENTS OF WESTERN OKLAHOMA**,**Geological Society of America *Abstracts with Programs.* Vol. 50, No. 6, doi: 10.1130/abs/2018AM-321819

ELLIOTT, W. C., GARNER, M., ELMORE, D., ROBERTS, J., WICKARD, A. and ILAVSKY, J., 2018, CLAY MINERALOGY AND POROSITY ESTIMATES OF THE DEVONIAN WOODFORD AND LOWER PERMIAN WOLFCAMPIAN SHALE, Geological Society of America Abstracts with Programs. Vol. 50, No. 6, doi: 10.1130/abs/2018AM-320678

Heij, G., Harris, B., and Elmore, R. d., 2019, MEASURING MECHANICAL

COMPACTION OF QUARTZ AND ILLITE MIXTURES USING MAGNETIC FABRICS: EXPLORING A PETROFABRIC APPROACH TO UNDERSTANDING COMPACTION IN FINE-GRAINED SEDIMENTS, Geological Society of America *Abstracts with Programs.* Vol. 50, No. 6, doi: 10.1130/abs/2018AM-322971

Heij, G and Elmore, D., 2018, Paleomagnetism and Magnetic fabric of the Lower Permian Wolfcamp Formation: Deciphering the timing of Diagenetic and Tectonic events in the Midland Basin, Abstract GP21B-0654 presented at 2018 Fall Meeting, AGU, Washington, D.C., 10-14 Dec.

Hamilton, M., Evans, S., and Elmore, R. D., 2018, Magnetic and Geochemical Characteristics of Alteration and Weathering at the Cambrian Unconformity, Northeastern Oklahoma, Abstract GP43c-0788 presented at 2018 Fall Meeting, AGU, Washington, D.C., 10-14 Dec.

Hamilton, M., Evans, S., Hardwick, J., Terrell, C., and Elmore, R. D., 2018, Characterization of Fluid Alteration in the Arbuckle-Basement System of Northern Oklahoma, Oklahoma Seismicity Workshop February 21–22, 2018.

Hardwick, J., Garrett, K., Elmore, R. D., 2018, Paleomagnetism, magnetic fabrics, and diagenesis of the Meramec and upper Osage units in the Anadarko Basin. Stack Play Workshop, OGS, Sept. 6, 2018

Hardwick, J., K. Garrett, and D. Elmore. 2018, Paleomagnetism of the Meramec and Osage formations in the Anadarko Basin, Geophysical Research Abstracts Vol. 20, EGU2018-10085-1, EGU General Assembly 2018

Steullet, A. K., D. Elmore, M. Hamilton and G. Heij, 2018, Paleomagnetism of the Marcellus Shale in cores from the Plateau Province of the Appalachian Basin, Geophysical Research Abstracts Vol. 20, EGU2018-10144, EGU General Assembly 2018

Heij, G., D. Elmore, J. Roberts, and A. Steullet, 2018, Magnetic Fabric of Prominent Unconventional Resource Plays in North America: Implications for decrypting key Burial events in Mudrocks, Geophysical Research Abstracts Vol. 20, EGU2018-5397, EGU General Assembly 2018.

Anson-Sanchez, M, Heij, G., and Elmore, R. D., 2019, Diagenesis of Mudstones: What can we learn from magnetic studies? AAPG National meeting, 2019.