

CURRICULUM VITAE

KAREN ZIEGLER

PERSONAL DETAILS

Name: Karen Ziegler
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Affiliation: Institute of Meteoritics, University of New Mexico at Albuquerque, U.S.A.
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RESEARCH INTERESTS

Stable isotope planetary- and cosmochemistry applied to meteoritics, early Solar System evolution, planetary accretion and differentiation, and Earth's core formation (in particular O and Si stable isotopes).
Novel isotope systems and analytical techniques - to understand in more details the processes controlling distribution and cycling of elements in planets.
Stable isotope geochemistry (e.g., O, H, Si) applied to the broad spectrum of rock-alteration processes (water-rock-interactions) at Earth's and other planets' surface and subsurface to understand underlying physicochemical and possibly biological processes.
Using stable isotopes as qualitative and quantitative tools for deciphering interactions at the litho-/hydro-/bio- and atmosphere interfaces.
Silicon isotope geochemistry: low- and high-temperature experimental and empirical determination of isotope fractionations during inorganic and biological processes.

EDUCATION

- Ph.D. 11/1993 Doctoral Dissertation in Clastic Sedimentology (low-temperature isotope geochemistry). Postgraduate Research Institute for Sedimentology (PRIS), University of Reading/UK (Shell/Esso EXPRO fellowship).
Thesis title: *Diagenetic and geochemical history of the Rotliegend of the Southern North Sea (UK sector): A comparative study.*
Advisors: B.W. Sellwood, A. Parker, M.R. Giles, A.E. Fallick, M.L. Coleman.
- M.Sc 10/1989 German Diplom (equiv. M.Sc) in Geology/Palaeontology. Technische Universität Clausthal (TUC), Clausthal-Zellerfeld/Germany.
Thesis-title: *"Holocene Development, Actuoecology and Sedimentbalance of the Spiekerroog Tidal Flats, German North Sea Coast"*.
Advisors: K. Müller, B.W. Flemming.
- B.Sc. 4/1985 German Vordiplom (equiv. B.Sc.) in Geology/Palaeontology. Bayrische Julius-Maximilians-Universität, Würzburg/Germany.

EMPLOYMENT

- 2011-present Senior Research Scientist III.
Stable Isotope Cosmochemistry.
Institute of Meteoritics, University of New Mexico at Albuquerque/U.S.A.
- 2008-2011 Associate Project Scientist III.
Stable Isotope Laboratory Manager (MC-ICPMS, gas source, clean laboratories).
Institute for Geophysics and Planetary Sciences, and Department of Earth and Space Sciences, University of California, Los Angeles/U.S.A.
- 2004-2008 Assistant Project Scientist.
Stable Isotope Laboratory Manager (MC-ICPMS, gas source, clean laboratories).
Institute for Geophysics and Planetary Sciences, and Department of Earth and Space Sciences, University of California, Los Angeles/U.S.A.
- 2001-2004 Research Associate. Department of Geography, University of California, Santa Barbara/U.S.A.

- 1999-2001 Research Fellow (Andrew W. Mellon Foundation post-doctoral fellowship). Department of Geography, University of California, Santa Barbara/U.S.A.
- 1995-1999 Research Fellow (NSERC post-doctoral fellowship). Department of Earth Sciences, University of Western Ontario, London/Canada.
- 1995 Scientific translator. Amoco Norway.
- 1993-1995 Research Fellow (EU post-doctoral fellowship). Postgraduate Research Institute for Sedimentology, Reading/UK.
- 1992 Consultant. Conoco UK.
Field instructor. Open University/UK.
- 1990-92 Field instructor for MSc sedimentology field-classes. Postgraduate Research Institute for Sedimentology, Reading/UK.
- 1989 Petrophysics Research Laboratory Scientist. BEB gas & oil, Hannover/Germany.
- 1985-89 Research and Teaching Assistant positions:
Technische Universität Clausthal/Germany - Departments of Geology, Petroleum Geology, Sedimentology, Tectonics, Mineralogy, Petroleum Engineering, Marine Geochemistry, Mineralogical Museum, Organic Geochemistry.
Research Internships:
Longyear Drilling Technologies, Celle/Germany.
BEB gas & oil, Production, Hannover/Germany.
Research Institute Senckenberg, Department of Marine Geology/Sediment-dynamics, Wilhelmshaven/Germany.

PROFESSIONAL SERVICES

Conference organization:

- 2012 Session Convenor, Goldschmidt Conference 2012, Montréal/Canada.
- 2001 Member of scientific committee for AIG-4 Conference (Applied Isotope Geochemistry), Pacific Grove/USA.
- 1995 Scientific organiser, convenor: *Petroleum Geology of the Southern North Sea: Future potential*. Organised through and supported by the Petroleum Group of the Geological Society, London/UK.
- 1992 Member of organisation committee for 2-weeks NATO Advanced Study Institute on “*Quantitative Diagenesis: Recent developments and applications to reservoir geology*”, University of Reading/UK.

Review activity:

Ziegler, K. (1996): Book Review (Clauer, N. & Chauduri, S. (1995) *Clays in Crustal Environments: Isotope Dating and Tracing*). *Mineralogical Magazine* **60/1**, pp 240-241.

Referee activity:

Geochimica et Cosmochimica Acta, Earth & Planetary Science Letters, Chemical Geology, Journal of Geophysical Research – Biogeosciences, Biogeochemistry, Clays and Clay Minerals, Applied Geochemistry, Sedimentology, Petroleum Geology, Clay Minerals, Terra Nova, Tellus, Geo-Marine Letters, Science.
Earth & Life Sciences Council, The Netherlands; US Geological Survey; National Science Foundation (NSF), U.S.A.; NASA Cosmochemistry.

COLLABORATORS (past and current, alphabetical)

C. Agee (University of New Mexico, Albuquerque), A. Brearley (University of New Mexico), Albuquerque, L.G.R. André (Musée Royal de l'Afrique Centrale, Belgium), C.R. Bern (US Geological Survey), A. Bischoff (Münster, Germany), J. Boesenberg (American Museum of Natural History), J.R. Boles (UC Santa Barbara), M.A. Brzezinski (UC Santa Barbara), D. Cardinal (Musée Royal de l'Afrique Centrale, Belgium), N.L. Cates (University of Colorado), O.A. Chadwick (UC Santa Barbara), J.E. Chambers (Carnegie Institute Washington), S. Chemtob (CalTech), B.-G. Choi (Seoul National University), M.L. Coleman (Jet Propulsion Laboratory), H.C. Connolly Jr. (CUNY, Brooklyn), M.J. DeNiro (UC Santa Barbara), L.A. Derry (Cornell), J.P. Dodd (University of New Mexico, Albuquerque), A.E. Fallick (Scottish Universities Research and Reactor Centre), C. Fouillac (BRGM, France), J.-P. Girard (BRGM, France), M. Humayun (Florida State University), M. Ivanova (Smithsonian Inst., Washington), E.F.

Kelly (Colorado State University), F.J. Longstaffe (University of Western Ontario, Canada), A. Kouchinsky (Swedish Museum of Natural History), S. Krot (Hawaii Institute of Geophysics and Planetology), A.C. Kurtz (Boston University), C.E. Manning (UC Los Angeles), J. Marin-Carbone (UC Los Angeles), R.A. Mendybaev (University of Chicago), K.D. McKeegan (UC Los Angeles), F.M. McCubbin (University of New Mexico, Albuquerque), C.A. Menold (Albion College), R.E. Mielke (Jet Propulsion Laboratory), S.J. Mojzsis (University of Colorado), F.M. Richter (University of Chicago), A.E. Rubin (UC Los Angeles), B. Sanjuan (BRGM, France), S.M. Savin (Case Western Reserve University), E.A. Schauble (UC Los Angeles), A. Shahar (Carnegie Institute Washington), Z.D. Sharp (University of New Mexico, Albuquerque), P.H. Warren (UC Los Angeles), J.T. Wasson (UC Los Angeles), A. F. White (US Geological Survey), J.R. Wood (Michigan Tech), E.D. Young (UC Los Angeles), C. Zhu (Indiana University), M.E. Zolensky (NASA Johnson Space Center).

PROFESSIONAL ORGANIZATIONS

International Association of Geochemistry and Cosmochemistry,
The Geochemical Society,
American Geophysical Union,
European Geophysical Union.

ANALYTICAL & TECHNICAL KNOWLEDGE

Gas source isotope ratio mass spectrometry:

- dual inlet and continuous flow, Gasbench, GC, IR- and UV-laser fluorination, conventional fluorination.
- off-line extraction lines (including sample preparation) for silicates, carbonates, waters.
- O, H, C, Cl, Si isotope systems.
- Optima, PRISM II, ThermoFinnigan MAT 252, 253, DeltaPlus dual inlet and continuous flow mass spectrometers; UV-, CO₂-*in-situ*-lasers.
- Mass spectrometer laboratory management, maintenance, service, repair, and training and teaching.

Multicollector-inductively coupled plasma mass spectrometry (MC-ICPMS):

- solutions by dry and wet plasma, laser ablation.
- Si, Mg, Fe isotope systems.
- ThermoFinnigan Neptune, 193 nm PhotonElectron laser ablations, Cetac Aridus II.
- MC-ICPMA laboratory management, maintenance, service, repair, and training and teaching.

Clean Room laboratory:

- All aspects of sample separation, digestion, and purification (ion exchange column chemistry) for isotope analyses.
- clean laboratory management, supervision, training, and maintenance.

Microscopy, fluid inclusion microthermometry, mineral separation techniques, XRD, SEM, TEM, EMPA, ICP-OES, TGA-DTA, XRF, FTIR.

BOOKS / CHAPTERS

Ziegler, K. (2006): Clay minerals of the Permian Rotliegend Group in the North Sea and adjacent areas. – In: Jeans, C.V. & Merriman, R.J. (editors) *Clay Minerals in onshore and offshore Strata of the British Isles: Origins & Clay Minerals Stratigraphy*. Min. Soc. Great Britain and Ireland, pp 355-393.

Ziegler, K., Turner, P. & Daines, S. (editors) (1997): *The Petroleum Geology of the Southern North Sea: Future Potential*. Geol. Soc. Spec. Publ. **123**, 216 pp.

Ziegler, K., Turner, P. & Daines, S. (1997): Introduction. - In: Ziegler, K., Turner, P. & Daines, S. (editors) *The Petroleum Geology of the Southern North Sea: Future Potential*. Geol. Soc. Spec. Publ. **123**, pp 1-3.

JOURNAL ARTICLES in preparation (projects completed)

Ziegler, K., Coleman, M.L., Mielke, R. E. & Young, E.D.: Tracing the source of oxygen during pyrite oxidation with $\Delta^{17}\text{O}_{\text{SO}_4}$. *Geochimica et Cosmochimica Acta*.

Ziegler, K., Chambers, J.E. & Young, E.D.: The meaning of $\Delta^{17}\text{O}$ in the inner solar system: evidence from high-precision meteorite data. *Earth and Planetary Science Letters*.

- Young, E.D. & **Ziegler, K.**: The $\Delta^{17}\text{O}$ anomaly in air O_2 : a product of respiration. *Earth and Planetary Science Letters*.
- Ziegler, K.** & Young, E.D.: Inhomogeneous oxygen isotopes in pallasite silicates?. *Meteoritics & Planetary Sciences*.
- Bischoff, A., **Ziegler, K.**, Dyl, K.A., Wimmer, K. & Young, E.D.: The Villalbeto de la Peña chondritic polymict breccia – Metamorphic conditions after final accretion based on oxygen isotopes and plagioclase compositions. *Meteoritics & Planetary Sciences*.
- Agee, C.B., Wilson, N.V., McCubbin, F.M., Sharp, Z.D., **Ziegler, K.**, Polyak, V. & Asmerom, Y.: New Unique Sample of the Martian Crust: Meteorite Northwest Africa 7034. *Nature*.
- Boesenberg, J.S., Hewins, R.H., **Ziegler, K.** & Young, E.D.: Evaporation and the absence of oxygen isotopic exchange between silicate melt and carbon monoxide at nebular pressures: Implications for chondrule formation. *Earth and Planetary Science Letters*.
- M. Humayun, M., Keil, K., **Ziegler, K.** & Bischoff, A.: Siderophile elements in metal from Northwest Africa 2526, an enstatite chondrite partial melt residue. *Meteoritics & Planetary Sciences*.
- Menold, C.A., Grove, M., Manning, C.E., Young, E.D., **Ziegler, K.** & Yin, A.: Assessing the relationship between excess argon content and recrystallization of ultrahigh-pressure metamorphic rocks. *Chemical Geology*.
- Chaussidon, M., Rollion-Bard, C., **Ziegler, K.** & Mojzsis, S.J.: Oxygen and silicon isotopes in zircons.

JOURNAL ARTICLES submitted

- Harju, E.L., Rubin, A.E., Ahn, I., Choi, B.-G., **Ziegler, K.** & Wasson, J.T.: Progressive aqueous alteration of CR carbonaceous chondrites. *Geochimica et Cosmochimica Acta*.
- Dyl, K.A., **Ziegler K.**, Bischoff, A., Young, E.D. Young, Wimmer, K. & Bland, P.A.: Early Solar System hydrothermal activity in chondritic asteroids on 1-10 year timescales. *Nature Geoscience*.
- Cates, N.L., Mojzsis, S.J., **Ziegler K.** & A.K. Schmitt: Inherited Hadean crust in the ca. 3780 Ma Nuvvuagittuq supracrustal belt (Québec, Canada). *Nature Geoscience*.

JOURNAL ARTICLES [citation numbers as of May 2011 per ScienceDirect/Scopus]

- Ziegler, K.**, Young, E.D., Schauble, E.A. & Wasson, J. T. (2010): Metal–silicate silicon isotope fractionation in enstatite meteorites and constraints on Earth's core formation. *Earth and Planetary Science Letters* **295**, pp 487-496 [cit. 4].
- Bern, C.R., Brzezinski, M.A., Beucher, C, **Ziegler, K.** & Chadwick, O.A. (2010): Weathering, dust, and biocycling effects on soil silicon isotope ratios. *Geochimica et Cosmochimica Acta* **74**, pp 876-889. [cit. 3].
- Shahar, A., **Ziegler, K.**, Young, E.D., Ricolleau, A., Schauble, E.A. & Fei, Y. (2009): Experimentally determined Si isotope fractionation between silicate and Fe metal and implications for Earth's core formation. *Earth and Planetary Science Letters*, **288**, pp 228-234. [cit. 5].
- Kouchinsky, A., Bengtson, S., Gallet, G., Korovnikov, I., Pavlov, V., Runnegar, B., Shields, G., Veizer, J., Young, E. & **Ziegler, K.** (2008): The SPICE carbon isotope excursion in Siberia: a combined study of the upper Middle Cambrian-lowermost Ordovician Kulyumbe River section, northwestern Siberian Platform. *Geological Magazine* **145**, pp 609-622. [cit. 4].
- Rubin, A.E., **Ziegler, K.**, & Young, E.D. (2008): Size scales over which ordinary chondrites and their parent asteroids are homogeneous in oxidation state and oxygen-isotopic composition. *Geochimica et Cosmochimica Acta* **72**, pp 948-958. [cit. 2].
- Kouchinsky, A., Bengtson, S., Pavlov, V., Runnegar, B., Torssander, P., Young, E.D. & **Ziegler, K.** (2007): Carbon isotope stratigraphy of the Precambrian–Cambrian Sukharikha River section, northwestern Siberian platform. *Geological Magazine* **144**, pp 609-618. [cit. 12].

- Brownlee, D. and 174 co-authors of the STARDUST Preliminary Examination Team, including **Ziegler, K.** (2006): Comet Wild 81P/2 under a microscope. *Science* **314**, pp 1711-1716. [cit. 335].
- McKeegan, K.D., Aléon, J., Bradley, J., Brownlee, D., Busemann, H., Butterworth, A., Chaussidon, M., Fallon, S., Floss, C., Gilmour, J., Gounelle, M., Graham, G., Guan, Y., Heck, P., Hoppe, P., Hutcheon, I.D., Huth, J., Ishii, H., Ito, M., Jacobsen, S., Kearsley, A., Leshin, L.A., Liu, M.-C., Lyon, I., Marhas, K., Marty, B., Matrajt, G., Meibom, A., Messenger, S., Mostefaoui, S., Nakamura-Messenger, K., Nittler, L., Palma, R., Pepin, R.O., Papanastassiou, D.A., Robert, F., Schlutter, D., Snead, C.J., Stadermann, F.J., Stroud, R., Tsou, P., Westphal, A., Young, E.D., **Ziegler, K.**, Zimmermann, L., Zinner, E. (2006): Isotopic Compositions of Cometary Matter Returned by STARDUST. *Science* **314**, pp 1724-1728. [cit. 172].
- Ziegler, K.** (2006): Clay minerals of the Permian Rotliegend Group in the North Sea and adjacent areas. *Clay Minerals* **41**, pp 355-393. [cit. 10].
- Ziegler, K.**, Chadwick, O.A., Kelly, E.F. & Brzezinski, M.A. (2005): Natural Variations of $\delta^{30}\text{Si}$ Ratios During Progressive Basalt Weathering, Hawaiian Islands. *Geochimica et Cosmochimica Acta* **69**, pp 4597-4610. [cit. 60].
- Ziegler, K.**, Chadwick, O.A., White, A.F. & Brzezinski, M.A. (2005): $\delta^{30}\text{Si}$ systematics in a granitic saprolite, Puerto Rico. *Geology* **33**, pp 817-820. [cit. 29].
- Derry, L.A., Kurtz, A.C., **Ziegler, K.** & Chadwick, O.A. (2005): Biological control of terrestrial silica cycling and export fluxes to watersheds. *Nature* **433**, pp 728-731. [cit. 107].
- Longstaffe, F.J., Ayalon, A., Bird, M., Harper, D., Fagan, R., He, S., Huang, L., Law, K., Léveillé, R., McKay, J., Middlestead, P., Tilley, B., Vitali, F., Wadleigh, M., Webb, E. & **Ziegler, K.** (2004): Tracking fluids, climate and crystal chemistry using the stable isotope compositions of clays. In: *European Society for Isotope Research*, Berichte des Institutes für Erdwissenschaften Karl-Franzens-Universität Graz, Bd. 8, pp 95-98.
- Ziegler, K.**, Hsieh, J.C.C., Chadwick, O.A., Kelly, E.F. & Savin, S.M. (2003): Halloysite as a kinetically controlled end product of arid-zone basalt weathering. *Chemical Geology* **202**, pp 461-478. [cit. 17].
- Chadwick, O.A., Gavenda, R.T., Kelly, E.F., **Ziegler, K.**, Olson, C.G., Elliott, W. C. & David M. Hendricks, D.M. (2003): The impact of climate on the biogeochemical functioning of volcanic soils. *Chemical Geology* **202**, pp 195-223. [cit. 71].
- Cardinal, D., Alleman, L.Y., de Jong, J., **Ziegler, K.** & André, L. (2003): Isotopic composition of silicon measured by multicollector plasma source mass spectrometry in dry plasma mode. *J. Anal. At. Spectrom.* **18**, pp 213-218. [cit. 43].
- Ziegler, K.**, Coleman, M.L. & Howarth, R.J. (2001): Palaeohydrodynamics of fluids in the Brent Group (Oseberg Field, Norwegian North Sea) from chemical and isotopic compositions of formation waters. *Applied Geochemistry* **16/6**, pp 609-632. [cit. 16].
- Ziegler, K.** & Longstaffe, F.J. (2000): Multiple episodes of clay alteration at the Precambrian/Paleozoic unconformity, Appalachian basin: Isotopic evidence for long-distance and local fluid migrations. *Clays and Clay Minerals* **48**, pp 474-493. [cit. 10].
[Cited in *Geotimes* **46/7** (2001) as a highlight of geoscience research in 2000].
- Ziegler, K.** & Longstaffe, F.J. (2000): Clay mineral authigenesis along a mid-continental scale fluid-conduit in Paleozoic sedimentary rocks from SW Ontario, Canada. *Clay Minerals* **35**, pp 239-260. [cit. 7].
- Flemming, B.W. & **Ziegler, K.** (1995): High-resolution grain size distribution patterns and textural trends in the backbarrier environment of Spiekeroog Island (southern North Sea). *Senckenbergiana Maritima* **26**, pp 1-14. [cit. 50].
- Ziegler, K.**, Sellwood, B.W. & Fallick, A.E. (1994): Radiogenic and stable isotope evidence for age and origin of authigenic illites in the Rotliegend, Southern North Sea, UK. *Clay Minerals* **29**, pp 555-566. [cit. 16].

PUBLISHED ABSTRACTS

- Ziegler, K.**, Zolensky, M.E., Young, E.D. & Ivanov, A. (2012): Oxygen isotope compositions of the Kaidun meteorite – indications for aqueous alteration of E-chondrites. 43th *Lunar and Planetary Science Conference*, #2414.

- Agee, C.B., Wilson, N.V., McCubbin, F.M., Sharp, Z.D. & **Ziegler, K.** (2012): Basaltic breccia nwa 7034: new ungrouped planetary achondrite, 43th *Lunar and Planetary Science Conference*, #2690.
- Connolly Jr., H.C., Beckett, J.R., Huss, G. R., Nagashima, K. Young, E.D., **Ziegler, K.**, Ma, C. & Rossman, G.R. (2011): Allende3509 HC-2: A compact type A – ‘F’ inclusion with a snake-like morphology. *Meteoritics & Planetary Science Annual Meeting*, London, August 2011.
- Ziegler, K.**, Marin-Carbonne, J., McKeegan, K.D. & Young, E.D. (2011): Silicon and oxygen isotope values of cherts and their precursors. Goldschmidt, Prague, August 2011.
- Ziegler, K.**, Dodd, J.P., Sharp, Z.D., Brearley, A.J. & Young E.D. (2011): Silicon and oxygen isotopes: the maturation of lacustrine diatoms. Goldschmidt, Prague, August 2011.
- Chemtob, S.M., Hurowitz, J.A., Guan, Y., **Ziegler, K.**, Eiler, J.M. & Rossman, G.R. (2011): Silica coatings on young Hawaiian basalts: constraints on formation mechanism from silicon isotopes. Goldschmidt, Prague, August 2011.
- Cates, N.L., Mojzsis, S.J., **Ziegler, K.** & Schmitt, A.K. (2011): Reworked Hadean crust in the ca. 3780 Ma Nuvvuagittuq supracrustal belt. Goldschmidt, Prague, August 2011.
- Ziegler, K.** & Young, E.D. (2011): Oxygen isotope compositions of Main Group Pallasites . 42th *Lunar and Planetary Science Conference*, #2414.
- Richter, F.M., Mendybaev, R.A., Janney, P.E., **Ziegler, K.** & Young, E.D. (2011): Experimental test of using Si and Mg isotopes to find the precursor of CAI-like evaporation residues. 42th *Lunar and Planetary Science Conference*, #1757.
- Young, E.D., Shahar, A., Schauble, E.A., **Ziegler, K.**, Lazar, C., Macris, C. & Manning, C.E. (2010): Experimental determinations of non-traditional stable isotope fractionation. (GSA, Denver, Oct. 2010)
- Choi, B.-G., **Ziegler, K.**, Wasson, J.T., Young E.D., Itoh, S. & Yurimoto, H. (2010): Oxygen isotope exchange of chondrules with absorbed oxygen during brief melting. *Meteoritics & Planetary Science* **45**, Supplement, A5198.
- Young, E.D., Schauble, E.A., Shahar, A., **Ziegler, K.**, Manning, C.E. & Lazar, C. (2010): Stable isotopes as tracers of planetary differentiation. *Geochimica et Cosmochimica Acta*, **74/12**, Supplement 1, p A1190.
- Ziegler, K.**, Young, E.D. & Schauble, E.A (2010): Silicon isotope fractionation between silicate and metal in meteorites. 41th *Lunar and Planetary Science Conference*, #2222.
- Ziegler, K.**, Coleman, M.L., Mielke R.E. & Young, E.D. (2010): Sources and contributions of oxygen during microbial pyrite oxidation: the triple oxygen isotopes of sulfate as a biosignature. 41th *Lunar and Planetary Science Conference*, #2245.
- Choi, B.-G., Ahn, I., **Ziegler, K.**, Wasson, J.T., Young E.D. & Rubin, A.E. (2009): Oxygen isotopic compositions and degree of alteration of CR chondrites. *Meteoritics & Planetary Science* **44/7**, Supplement, A5339.
- Ziegler, K.**, Young, E.D., Schauble, E.A. & Wasson, J. T. (2009): Silicon isotope fractionation between silicate and metal from an Enstatite Meteorite: Implications for Earth’s core formation. *Meteoritics & Planetary Science* **44/7**, Supplement, A5435.
- Dyl, K.A., Bischoff, A., **Ziegler, K.** Wimmer, K. & Young, E.D. (2009): Evidence for Aqueous Alteration in Ordinary Chondrites from Compositional and Oxygen Isotopic Trends in an Exotic Fragment. *Meteoritics & Planetary Science* **44/7**, Supplement, A5162.
- Ziegler, K.**, Young, E.D., Schauble, E.A. & Wasson, J. T. (2009): Silicon isotope fractionation between silicate and metal from an enstatite meteorite. *Geochimica et Cosmochimica Acta*, **73/13**, Supplement 1, p A2782.
- Schauble, E.A., Young, E.D., Ziegler, K., Shahar, A., Halliday A.N. & Georg, R.B. (2009): Silicon isotope fractionation at high pressures and temperatures. *Geochimica et Cosmochimica Acta*, **73/13**, Supplement 1, p A 3065.
- Ziegler, K.**, Young, E.D. & Wasson, J.T. (2009): High-precision Silicon isotope ratio measurements of Earth and enstatite meteorites and implications for Si isotope fractionation during core formation. 40th *Lunar and Planetary Science Conference*, #2446.
- Shahar, A., **Ziegler, K.**, Young, E.D., Ricolleau, A., Macris, C.A., Schauble, E.A. & Fei, Y. (2009): Experimental

evidence for isotope fractionation during planetary differentiation. 40th *Lunar and Planetary Science Conference*, #1640.

- Dyl, K.A., Bischoff, A., **Ziegler, K.** & Wimmer, K. (2009): Metamorphic conditions within the Villalbeto De La Peña L-chondrite parent body based on UV laser fluorination oxygen isotopic studies on a unique fragment. 40th *Lunar and Planetary Science Conference*, #2506.
- Warren, P.H., Rubin, A.E. & **Ziegler, K.** (2009): Northwest Africa 5415: A Howarditic impact-melt breccia with zoned relict orthopyroxenes and augites, and corroded, complexly mantled Fo-59 olivines. 40th *Lunar and Planetary Science Conference*, #2545.
- Ziegler, K.**, Coleman, M.L. & Young, E.D. (2008): Sources and Contributions of Oxygen During Microbial Pyrite Oxidation: the Triple Oxygen Isotopes of Sulfate. *Eos Trans. AGU*, **89(53)**, Fall Meet. Suppl., Abstract P53D-03.
- Shahar, A., Macris, C.A., **Ziegler, K.**, Young, E.D., Ricolleau, A., Schauble, E.A. & Fei, Y. (2008): Experimental Evidence for Iron and Silicon Isotope Fractionation during Earth's Core Formation. *Eos Trans. AGU*, **89(53)**, Fall Meet. Suppl., Abstract MR32A-03.
- Schauble, E.A., Hill, P.S., Shahar, A., Tonui, E., **Ziegler, K.**, Young, E.D. & Manning, C.E. (2008): Combining theory and experiment to calibrate stable isotope fractionations. *Geochimica et Cosmochimica Acta*, **72/12**, Supplement 1, p A828.
- Shahar, A., **Ziegler, K.**, Young, E.D., Ricolleau, A., Schauble, E.A. & Fei, Y. (2008): Experimental Evidence for Silicon Isotope Fractionation between Silicate and Si in Fe Metal. *Geochimica et Cosmochimica Acta*, **72/12**, Supplement 1, p A848.
- Ziegler, K.**, Coleman, M.L. & Young, E.D. (2008): Tracing the source of oxygen during pyrite oxidation with $\Delta^{17}\text{O}_{\text{SO}_4}$. *Geochimica et Cosmochimica Acta*, **72/12**, Supplement 1, p A1106.
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