

Friends of Mineralogy, Colorado Chapter Newsletter – March 2017

March Meeting – Thursday, March 9, 7:30 pm Board meeting 6:30-7:30 p.m., Denver Museum of Nature and Science – VIP Room *Enter the Museum through the Security/Staff entrance to the left of the main entrance.*

Mineralogy and petrology of a REE pegmatite near Wellington Lake: a case study providing new insight into pegmatite petrogenesis

by Markus Raschke
University of Colorado, Boulder

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The pegmatite near Wellington Lake; Markus Raschke, inside the pegmatite.



Outside the pegmatite; with graduate students Rhiana Henry and Evan Anderson.

Mineralogy and petrology of a REE pegmatite near Wellington Lake: a case study providing new insight into pegmatite petrogenesis, by Markus Raschke

The formation of granite pegmatites in terms of mineralogy and zonation has remained a long-standing puzzle. In this talk I will discuss recent result of a comprehensive petrographic and mineralogical study addressing this question at the example of a pegmatite near Wellington Lake in the South Platte district. The South Platte district, Colorado, in the 1.09 Ga 'A-Type' Pikes Peak Batholith, represent globally significant examples of the Nb-Y-F (NYF) type. Series of whole rock and REE mineral analyses, mineral abundance and distribution, whole pegmatite compositional estimate, fluid inclusions micro-thermometry, and Nd-isotope analysis were performed. Based on the aggregate of the results, we build the hypothesis that the pegmatite is co-genetic and derived from the granite magma, and formed after significant super-cooling by fractional and sequential crystallization.

Note: Some results of this work can also be read at:

Raschke, Markus B., Phillip M. Persson, Charles Stern and Julien Allaz. 2013. Petrology of a REE pegmatite near wellington Lake, CO: An intermediary between NYF-type and miarolitic REE-poor pegmatites in the Pikes Peak Batholith. *Geology Society of America, abstracts with programs*, v 45, no. 5, p. 41 Paper 21-4.

Raschke, Markus B., Evan J. D. Anderson, M. Alexandra Skewes, and Katharina Pfaff. 2016. Mineralogy and petrology of a newly discovered REE pegmatite near Wellington Lake, South Platte pegmatite district, Colorado. At GSA Annual Meeting in Denver, Colorado, USA, September 2016. Paper No. 148-6.

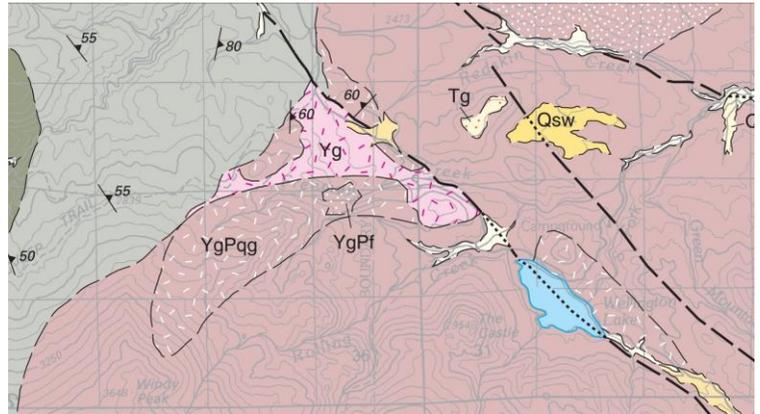
Raschke, Markus B., Evan J. D. Anderson, M. Alexandra Skewes, Julien M. Allaz, Charles Stern, Phillip M. Persson, Rhiana Henry, and Katharina Pfaff. 2016. Mineralogy and petrology of a newly discovered REE pegmatite near Wellington Lake, in relation to the South Platte pegmatite district, Colorado. Abstract in Second Eugene E. Foord Pegmatite Symposium, Abstracts, short papers, posters and program, Colorado School of Mines campus, Golden, CO, July 15-19, 2016, p. 78-82.

Biography:

Markus Raschke is Professor at the Department of Physics, Department of Chemistry, and JILA at the University of Colorado at Boulder. His research is on the development of novel nano-optical spectroscopy and imaging techniques with applications to molecular, soft- and biomaterials, quantum hard matter and minerals. He received his PhD in 2000 from the Max-Planck Institute of Quantum Optics and the Technical University in Munich, Germany. Following appointments at the University of California at Berkeley, the Max-Born-Institute in Berlin, and the University of Washington, he joined the University of Colorado at Boulder in 2010.

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Topographic map and geologic map of the Wellington Lake area (added by the editor; not guaranteed to include the exact site of the pegmatite being studied!). Topo from www.digital-topo-maps.com. Geologic map from USGS Geologic Map of the Bailey 30' x 60' quadrangle (2011), SIM-3156, by Chester A. Ruleman et al.



Legend:

Qsw (yellow) = Sheetwash deposits (Holocene and late Pleistocene)

Tg (pale yellow) = Gravel deposits (Pliocene? and Miocene?)

Dull red (most of the map area shown) = Pikes Peak Granite (symbol YgP, not visible here)

YgPf = Pikes Peak fine-grained granite

YgPqg = Pikes Peak monzogranite to granodiorite

Yg (pink) = Monzogranite and granite (older, Berthoud Plutonic Suite, ~1.4 Ga)

Dark gray-green at extreme left edge of map (symbol Xqg, not visible here) = Monzogranite and granodiorite (older, Roubt Plutonic Suite, ~1.7 Ga)

Light gray on left of map (symbol Xb, not visible here) = Biotite gneiss (older, ~1.7 Ga)

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“In case you wondered?”, what is JILA that our March speaker (and FM member) Markus Raschke is affiliated with at CU? Here is what their website has to say about it:

About JILA: History, mission, vision <https://jila.colorado.edu/about/about-jila>

“Because you've asked: What does "JILA" stand for?

“When JILA was formed in 1962 as a joint institute of CU Boulder and NIST, the acronym stood for "Joint Institute for Laboratory Astrophysics". However, JILA's research quickly expanded to include fields like atomic, molecular and optical physics, as well as biophysics, quantum information, precision measurement, and more! So although the name "JILA" has stuck, we no longer spell out the acronym that we have outgrown.

“For a full history on JILA and its 50-year evolution, please visit our online version of the book JILA: The First 50 Years.

“The wide-ranging interests of our scientists have made JILA one of the nation's leading research institutes in the physical sciences. Our scientists explore some of today's most challenging and fundamental scientific questions about quantum physics, the design of precision optical and X-ray lasers, the fundamental principles underlying the interaction of light and matter, and processes that have governed the evolution of the Universe for nearly 14 billion years. Research topics range from the small, frigid world governed by the laws of quantum mechanics through the physics of biological and chemical systems to the processes that shape the stars and galaxies. JILA science encompasses eight broad categories: Astrophysics, Atomic & Molecular physics, Biophysics, Chemical physics, Laser Physics, Nanoscience, Precision Measurement, and Quantum Information.”

President's Message

Hello all,

Our March meeting will feature Markus Raschke, Physics Professor at CU, giving a presentation about a novel and interesting pegmatite rich in rare-earth minerals that he has been involved in studying, near Wellington Lake, near the outer edge of the South Platte pegmatite district and the Pikes Peak batholith.

Looking ahead, friends of Mineralogy Colorado Chapter will be doing things a little differently at our May meeting. Social Time! The meeting (May 11) will start at 7:30 as usual but we would like to use the first half hour period for socializing and snacks. If everyone could bring a little something to share, chips & dip, fruit, veggie tray, juice, etc. This would give us all an opportunity to talk and enjoy each other's company. In addition, if anyone has some mineral news to share, verbally, as physical specimens or as one or two powerpoint slides or jpg, you will have the time to present it to the group. At 8:00 p.m. we will have announcements followed by our speaker. Our regular May speaker is still "TBA".

The F.M. National now has a new president, Mark Jacobson. I will be representing FMCC at the RMFMS conference this month in Albuquerque.

In May (Saturday, May 13) we will also be having our annual silent auction. This is our primary source of funds for FMCC. Volunteers to help run the auction are always needed, and as well, all of us will have the opportunity to sell and purchase mineral specimens.

See you all this Thursday for our talk by Markus Raschke!

--- Jeff Self, March 2017

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At our January 12 FM meeting: speaker Mike Gobla, "Minerals of the Leonard mine, Butte, Montana", receiving a certificate of appreciation from Colorado Chapter president Jeff Self.

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Calendar of coming events:

Thurs., Mar. 9, 7:30 p.m., at the monthly meeting of the Colorado Chapter, Friends of Mineralogy, **Mineralogy and petrology of a REE pegmatite near Wellington Lake: a case study providing new insight into pegmatite petrogenesis**, by Dr. Markus Raschke, University of Colorado. VIP Room, Denver Museum of Nature & Science. All are welcome. See <http://friendsofmineralogycolorado.org/events/> for an abstract, photos, and more details.

Fri., Mar. 10, 7:30 p.m., at the monthly meeting of the Denver Gem and Mineral Guild, **"Colorado's Ten Best Mineral Collecting Sites"**, by Pete Modreski, USGS. All are welcome; Berthoud Hall, Room 109, Colorado School of Mines campus, Golden CO.

Sun., Mar. 12, noon (for potluck lunch) or 1:00 p.m. (for the lecture), **"Volcanism on the Colorado Plateau"**, by Bob Knapp, at the monthly meeting of the Florissant Scientific Society. UCCS (University of Colorado at Colorado Springs), Osborne Center, Room B-215. All are welcome. For more info contact Bob at rknapp@uccs.edu or call 719-260-7178.

Thurs, Mar. 16, 7:00 p.m., monthly meeting of the Colorado Scientific Society, featuring a talk by Will Yeck, National Earthquake Information Center, USGS: **The Far-Reaching Effects of Wastewater Injection: Recent Case Studies of Anthropogenic Earthquakes**. At Shepherd of the Hills Church, 11500 W. 20th Ave., Lakewood. All are welcome. Social time 6:30, meeting begins at 7. See www.coloscisoc.org for an abstract and more info.

Fri.-Sat.-Sun., Mar. 31-Apr. 2, Fort Collins Gem & Mineral Show, sponsored by the Fort Collins Rockhounds Club, at the McKee 4-H Building, Larimer County Fairgrounds/The Ranch, I-25 exit 259. 4-8 p.m. Fri., 9-6 Sat., 10-5 Sun.

Fri., Apr. 7, 3:00 p.m., **Reef Communities from the Great Lakes of the Eocene**, by Mark Loewen, University of Utah. Denver Museum of Nature & Science Earth Sciences Colloquium, VIP Room, DMNS, all are welcome, Museum admission not required to attend.

Thurs., Apr. 13, 7:00 p.m., Heritage Exhibit Lecture at the Western Museum of Mining and Industry, Colorado Springs: Mindy S. Vogel, Geologist, U.S. Forest Service, **“Rock, Paper, Forest Service: A Summary of Mining and Permitting on Forest Service Lands.”** A Heritage Lecture to accompany the new temporary exhibit (Feb. 9 – June 3), **“Minerals We Use Everyday: Mined from Our National Forests”**. To attend this free lecture, please call 719-488-0880 or respond by e-mail at rsvp@wmmi.org (a 6 p.m. reception will probably precede the lecture). For more information see the WMMI website, <http://www.wmmi.org/home>.

Fri., Apr. 14, 6:45 p.m., **North Jeffco Gem & Mineral Club Silent Auction**. APEX Community Center, 6842 Wadsworth Blvd., Arvada. Setup at 5:30, auction begins at 6:45. All are invited.

Fri.-Sat.-Sun., Apr. 14-17, Colorado Mineral and Fossil Spring Show, Crowne Plaza Hotel - Airport, 15500 E. 40th Ave. Denver, CO; 9 a.m. to 6 p.m. Fri. & Sat., 9-5 Sunday. Free admission. See <http://www.rockygems.com/colorado-mineral-fossil-spring-show-2017.html>.

Saturday evening at the show, 6-9 p.m., will be the **2nd Annual Colorado School of Mines Geology Museum Fundraiser & Social**, including a silent & vocal auction.

Thurs, Apr. 20, 7:00 p.m., monthly meeting of the Colorado Scientific Society, featuring a talk by Scott Denning, Atmospheric Sciences, Colorado State University, **“Climate models and global change”**. At Shepherd of the Hills Church, 11500 W. 20th Ave., Lakewood. All are welcome. Social time 6:30, meeting begins at 7. See www.coloscisoc.org for more info.

Sat., Apr. 22, 9 a.m., an **Earth Day Geology Hike on North Table Mountain**, to include seeing the Table Mountain lava flows, the Denver Formation, and the zeolite locality in the middle lava flow at a former paving stone quarry. To be led by Pete Modreski, USGS. Details are to come, or contact pmodreski@usgs.gov, 303-202-4766.

Sat.-Sun., Apr. 22-23, Rock/mineral collection sale (8-5 Sat., 10-3 Sun.). “After 60+ years of rock hounding and collecting, Dan Lovitt, Littleton Club, has decided it is time to disperse most of his accumulated material. This is an eclectic collection and includes many different rocks, minerals, fossils and even some landscape/yard art material. The largest volume of rocks will be of fossil wood (petrified wood); approximately 2500 – 3000 pounds. The second largest group of material will be of agates, jaspers and various other workable stones; approximately 1600 -1900 pounds. Next will be mineral specimens; approximately 30 – 35 flats/containers. Some slabs of Wyoming nephrite jade, obsidian...”. Soft drinks/water and hot dogs for all; small gifts for children under 12. 7045 W. Pineview Dr., Littleton 80125. For more description of material to be sold, please write to or Daniellovitt@aol.com or to Dale Gann, gatorgann@msn.com.

Sun., Apr. 23, noon (lunch), 1 p.m. (lecture), **“Geology of South Park”**, presentation at the monthly meeting of the Florissant Scientific Society, by Peter Barkmann, Colorado Geological Survey. Probably to be held at the Dinosaur Ridge, Dinosaur Discovery Center, Morrison. See <http://www.fss-co.org/> for details. All are welcome. Peter plans to follow up this talk by leading a 1-day geology field trip across South Park, tentatively scheduled for Sunday, June 25.

Sat.-Sun., April 29-30, 9 a.m. – 4 p.m., **“Announcing another ridiculously exciting Book/Garage Sale” at the Colorado School of Mines Geology Museum** 1310 Maple St., Golden. “Thousands of maps; hundreds of books, journals, minerals, fossils, etc. Prices vary by item or box. Most prices will drop throughout the event. Information: 303-273-3815.”

Thurs., May 11, 7:30 p.m., monthly meeting of the **Colorado Chapter, Friends of Mineralogy**. 7:30 p.m., social time, refreshments, meet & talk with members, and all are invited to bring specimens to show or pictures to share as Powerpoint or .jpg images. 8:00 p.m., formal meeting and program—speaker & topic still TBA at this time. VIP Room, Denver Museum of Nature & Science. All are welcome. See <http://friendsofmineralogycolorado.org/events/> for more info, to be announced.

Sat., May 13, Friends of Mineralogy, Colorado Chapter, Silent Auction. Clements Community Center, 1580 Yarrow St., Lakewood CO, 12:00-4:00 (setup begins at 10:30 a.m., auction begins at 12:00, verbal auction 1:00, all tables will close by 3:00 p.m., checkout follows).

Fri.-Sat.-Sun., June 2-4, Pikes Peak Gem & Mineral Show, sponsored by the Colorado Springs Mineralogical Society. At Mortgage Solutions Financial Expo Center, 3650 N. Nevada Ave., Colorado Springs.

July 14-15-16, 9 a.m. – 6 p.m. daily, there will be a “**Home Rock Show (Sale)**” by John Haney, 4242 Thompson Court, Denver CO. 80216 (south of I-70, east of York St. & west of Steele St.). “Rough rock, slabs, cabs, enhydros, fossils, amber, minerals, crystals, gemstone bowls & boxes, lapidary equipment & supplies; discounts for lapidary students.” Contact, Rocksisme@comcast.net, 303-296-8268.

Fri.–Mon., July 21-24, Gold and Silver Deposits in Colorado, a symposium cosponsored by the Friends of the Colorado School of Mines Geology Museum and DREGS (Denver Region Exploration Geologists Society). “The event will feature two days of talks (July 22 - 23) and two days of field trips (July 21 and 24) to historic Colorado gold and silver mining areas.” **Call for Papers:** Proposals to give a presentation at the symposium are due by March 15; submit to Pete Modreski, pmodreski@usgs.gov.

For more lecture series during the year see:

CU Geological Science Colloquium (Wednesdays, 4 p.m.) see <http://www.colorado.edu/geolsci/colloquium.htm>

CSU Dept. of Geoscience Seminars (Fridays, 4 p.m.), see <http://warnercnr.colostate.edu/geo-news-and-events/departement-seminars>

Van Tuyl Lecture Series, Colorado School of Mines, (Tuesdays, 4 p.m.): http://inside.mines.edu/GE_Lecture-Series

Denver Mining Club (Mondays, 11:30), see <http://www.denverminingclub.org/>

Denver Region Exploration Geologists Society (DREGS; 1st Monday, 7 p.m.), <http://www.dregs.org/index.html>

Rocky Mountain Map Society (RMMS; Denver Public Library, Gates Room, 3rd Tuesday, 5:30 p.m.), <http://rmmaps.org/>

Rocky Mountain Micromineral Association, <http://rocky-mountain-micromineral-association.com/>

Western Interior Paleontology Society (WIPS; Denver Museum of Nature & Science, 1st Monday, 7 p.m.), <http://westernpaleo.org/> .

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Rocky Mountain Micromineral Association – an invitation

The Rocky Mountain Micromineral Association (RMMA) meets monthly, normally on the 2nd Sunday of the month, 2-4 p.m. in the conference room opposite the entrance to the Colorado School of Mines Geology Museum; all are welcome. “In an effort to recruit more visitors/members, the RMMA has started a Microscope Loan Program. Since we know that the largest stumbling block for a Mineral Collector to get into micromineralogy is access to a microscope, we are acquiring microscopes to loan to new members. Free at first, and then we will charge a sliding scale until they acquire their own microscope. We know that FM contains a knowledgeable group of mineralogists, and we would like to expand that mineralogy knowledge-base by helping them to observe the many species only seen with magnification, and to join the RMMA. We also have had a number of meetings where we discuss photography of microminerals. I would appreciate it if you would tell your members about our organization, and our lending library for active members. I know Colorado FM has a strong interest in pegmatites, and a lot of pegmatites contain rare minerals only available in micro sizes. At our next few meetings for example, we will be having silent auctions that include crystals of eosphorite from the Emmons Quarry, Greenwood, Oxford Co., Maine, (and, some of you know that we give away “pocket sweepings” with crystals of phenakite from Mount Antero--some of these have yielded beautiful, clear, singles and drillbit twins).”

---Joe Taggart, President, RMMA.

The next RMMA meeting will be Sunday, March 12, 2 p.m., at the CSM Museum. For more information please contact Joe at j-taggart@comcast.net ; and of course, all are welcome to just “drop in” at their meeting at any time.

Notes about FM this month: 2017 Dues are Due!

Annual Dues to Friends of Mineralogy, Colorado Chapter are \$15.00, or \$25.00 for a family; this includes membership in the national organization, Friends of Mineralogy, Inc.. (After many years of dues at \$13, we have *finally* raised them just to \$15, and created a new category of Family Membership for \$25.) New members are *always* welcome! To pay dues, mail a check for \$15 or \$25 to FM-Colorado Chapter, P.O. Box 234, Arvada, CO 80001-0234; please include your name, email address and mailing address; or pay in person at one of our meetings. Attach a copy of our membership form (in this newsletter, or available on our FMCC website under “Membership”), especially if you want to update your information. All our newsletters and mailings are normally sent by email, unless the member is unable to receive them that way. If you are uncertain about your membership status, please contact our Treasurer, Gloria Staebler, gastaebler@aol.com, 303-495-5521. *Now* is the time to pay your dues for 2017!

See our Colorado Chapter website: <http://friendsofmineralogycolorado.org/>

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Dates for 2017 FM Colorado Chapter activities:

Meetings are normally held at 7:30 p.m. on the 2nd Thursday of alternate (odd-numbered) months, at the VIP Room in the Denver Museum of Nature and Science. The dates are sometimes shifted in September and November so as not to conflict with the Denver Gem & Mineral Show and the New Mexico Mineral Symposium. Visitors are *always* welcome at our meetings!

Meeting dates for 2017:

Jan. 12, FM meeting

Mar. 9, FM meeting

May 11, FM meeting

May 13, FM Silent Auction, Clements Community Center, Lakewood

Sept. 7, 14, or 21, FM meeting (*date to be determined*)

Sept. 15-17, Denver Gem and Mineral Show; 2017 show theme, “Gold and Silver” (50th anniversary)

Nov. 16, FM meeting

Friends of Mineralogy, Colorado Chapter, 2017 officers

President:	Jeff Self, selfawareminerals@gmail.com
Vice President:	Bob Hembree, rhembree@comcast.net
Secretary:	Alan Keimig, alan.keimig@gmail.com, 303-755-9604
Treasurer:	Gloria Staebler, gastaebler@aol.com, 303-495-5521
Denver Museum N&S Liaison:	Alan Keimig, alan.keimig@gmail.com, 303-755-9604
DG&MS Council Trustee:	David Bunk, dave@davebunkminerals.com
FMCC Newsletter:	Peter Modreski, pmodreski@aol.com, 303-202-4766
Field trip planner (not field trip leader):	unfilled
FMCC Website:	unfilled
Postings for the FM national facebook page:	unfilled
At-large voting board members:	

Larry Havens, lghavens@aol.com , 303-757-6577

Don Bray, don-bray@copper.net , 303-681-3646

Ed Pederson, mineraljeep@aol.com

Mark Jacobson, markivanjacobson@gmail.com, 1-337-255-0627

Plus one unfilled position

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Prospective members for the Colorado Chapter, please send this form with your check to the address below. This form may also be used to renew your membership. Membership in the local chapter includes membership in the National Society. A local chapter member does not need to live within the area. Membership lists are not shared outside of the organization. Membership in the local chapter provides membership in the Rocky Mountain Federal of Mineralogical Societies (RMFMS) with its associated group 3rd party liability insurance for field trips.

Note: Dues have increased for 2017: Please mail annual dues of **\$15 for an individual**, or **\$25 for a family** made out to **Friends of mineralogy, Colorado Chapter** to:

Ms. Gloria Staebler

Friends of Mineralogy - Colorado Chapter
P.O. Box 234
Arvada, CO 80001-0234

Please complete the following for new members.

Last Name: _____ First name: _____

Middle name (optional): _____

Street Address (used for mail): _____

City: _____ State or Province: _____

County: _____ Zip or Postal Code: _____

Telephone (land line): _____ Telephone (Cell phone): _____

Email address: _____

Signature: _____ Date: _____

My primary area of interest is: _____

Chapter and National newsletters will be sent to you by email unless you request a paper copy to be mailed. _____ Please note that mail newsletter as sent as a black and white paper copy.

Friends of Mineralogy Colorado Chapter is affiliated with the Mineralogical Record Magazine, The Mineralogical Society of America (MSA), the American Geological Institute (AGI), Rock and Minerals magazine, the American Federation of Mineralogical Societies and the Rocky Mountain Federation of Mineralogical Societies.

Friends of mineralogy, INC. is composed of member of local chapters, of which in 2014, seven chapters existed. Members may affiliate with any chapter or none. Local chapters issue newsletters as does the national organization.