



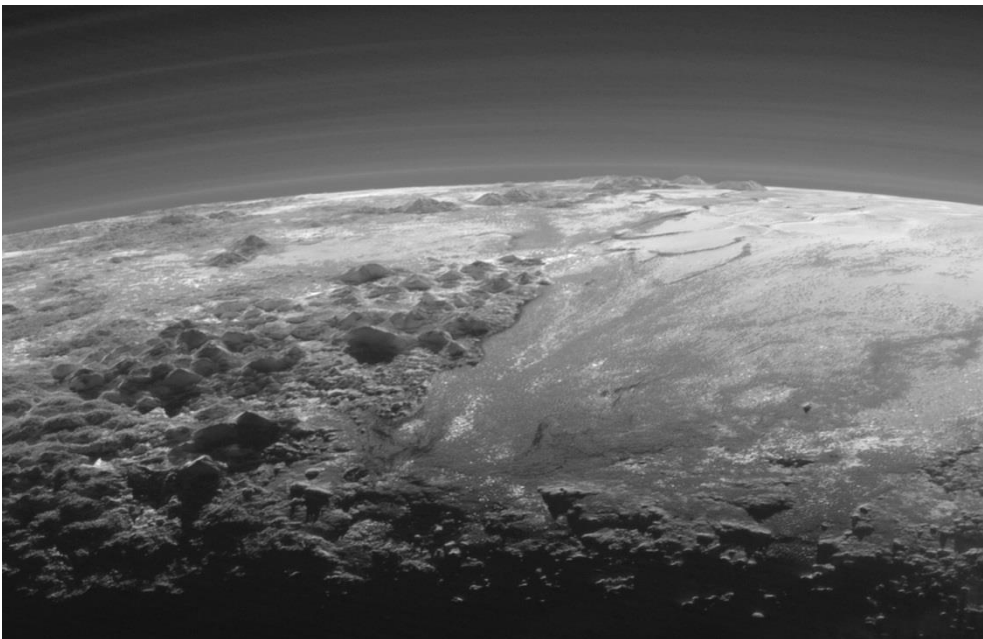
## Colorado Scientific Society

*The objective of the Society is to promote the knowledge and understanding of Earth science, and its application to human needs*

***Thursday, Feb. 18 meeting, 7:00 p.m. (social time 6:30)  
Shepherd of the Hills Church, 11500 W. 20<sup>th</sup> Ave., Lakewood CO  
All are Welcome! Program:***

# **The Weird and Wonderful Geology of Pluto and its Moons**

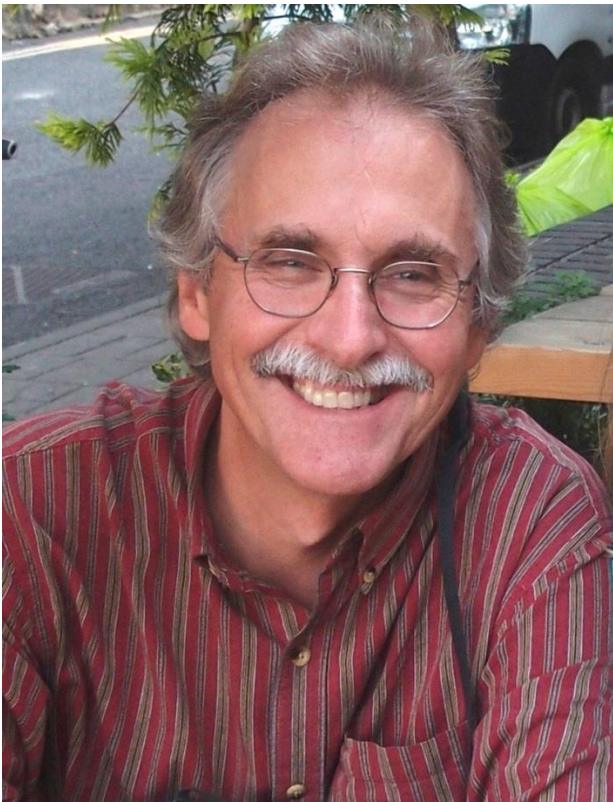
John Spencer, Southwest Research Institute, Boulder CO



### ABSTRACT

In July 2015, the New Horizons mission gave us our first detailed view of the Pluto system after a 9.5 year journey from Earth. New Horizons revealed that Pluto's geology is complex and remarkably diverse. Ancient cratered and fractured terrain is interrupted by much younger features that may be active to the present day, including rugged ice mountains, a vast plain of volatile ice, and other features that defy explanation. Pluto's big moon Charon also has a geologically varied surface, and its four small moons have

surprises of their own. The talk will describe the mission, what we've learned, and the spacecraft's continuing journey into the Kuiper Belt.



**John Spencer** is an Institute Scientist at the Southwest Research Institute in Boulder. He obtained a BA in Geology from the University of Cambridge in 1978, and a PhD in Planetary Sciences at the University of Arizona in 1987. He then worked at the University of Hawaii and Lowell Observatory in Arizona, before joining Southwest Research Institute in 2004. His primary interest is in the moons and other small bodies of the outer solar system. He has served on the science teams of the Galileo Jupiter Orbiter and Cassini Saturn Orbiter, and is deputy leader of the geology and geophysics team on the New Horizons Pluto mission.

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**Colorado Scientific Society dues** are \$20 for regular members, \$10 for corresponding members (outside the Colorado Front Range area) and only \$5 for students. Mail a check to the CSS or pay with a credit card using PayPal on the CSS website. Contact CSS Treasurer Don Sweetkind at 303-236-1828 or [dsweetkind@usgs.gov](mailto:dsweetkind@usgs.gov) if you are uncertain of your dues and membership status. Extra payments to contribute to our Memorial Funds or Endowment Fund are always most welcome; you'll see a list of them on the membership form, or see our website at <http://www.coloscisoc.org/membership/dues.html>.

***Now is the time to renew your membership for 2016! Thank you!***

\* \* \* \* \*

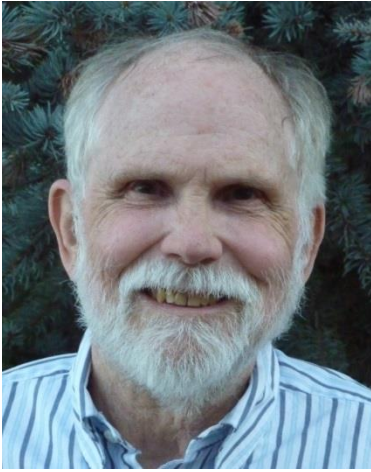
**Peter Barkmann**, CSS President, will have a message for us next month. For the moment, we'll give him a rest!

But we have been coming up with some ideas for some short field trips this spring/summer; more about that in the next newsletter!

***Save the Date! Thursday, April 14: our 2016 CSS Past Presidents' Dinner. White Fence Farm. Speaker: Matt Silverman, Tempest at Teapot Dome, Wyoming: the Greatest Political Scandal in the History of the American Oil Industry***



## *Introducing – three new (or fairly new) Councilors of the CSS*



### **Chris Morrison**

Chris says he is a retired software engineer, not a geologist. He worked for Storage Technology followed by Sun Microsystems, then Oracle on tape library management systems. Chris' interest in geology comes from his father, Dr. Roger Morrison, who focused on the Quaternary geology of the Great Basin and the Southwest, both at the USGS and after he retired. Chris' interests in mountaineering and the sedimentary rocks of the Colorado Plateau has morphed into an interest in the geology of everywhere he visits, especially the plate tectonic history. He has been a member of Colorado Scientific Society since about 2002. Chris was appointed in 2015 to fill a vacant position for a 2014-2016 term as Councilor.



### **Linda Barton Cronoble**

Linda is an MSU Denver graduate with a BS in Land Use/ Geology. She relocated to Denver from Orlando, Florida in 2001 and has been an avid camper, hiker, rock hound, and skier ever since. She has been a active fund raiser for FODR, and spent her first two years with CSS as newsletter editor. She currently resides in Lakewood with her husband Jim, dog Pei, two cats, and a bird, and is the owner/manager of Rustic Relics rock and antique shop. Linda was elected to a 2016-2018 term as Councilor.



### **Melissa Foster**

Melissa is a Quaternary geologist and geomorphologist. Her interest in geology grew while "visiting" Humboldt State University for a semester as an undergraduate. Over the course of a 9 year visit in Arcata, CA, Melissa was employed as an environmental consultant and also went back for her MS degree at Humboldt. For her master's degree (2010), she researched the propagation of knickpoints in the South Fork Eel River in northern California, working with Harvey Kelsey. She moved to Colorado in 2010 to pursue her Ph.D., working with Bob Anderson at the University of Colorado. While at Colorado, Melissa has researched the Quaternary evolution of Front Range surfaces, using cosmogenic radionuclide dating. She finished her Ph.D. in January of 2016. Melissa recently moved to Golden, where she lives with her husband, William, and daughter, Mae. She was elected to a 2016-2018 term.

\* \* \* \* \*

### ***January's Where is this Rock?***

I had at least 5 responses to this picture, and all were correct. It is the “Valmont Dike”, an intrusion of mafic/intermediate igneous rock (mafic monzonite) cutting the Pierre Shale, east side of Boulder. The dike’s composition is similar to that of the Ralston Dike north of Golden, and to the Table Mountain Shoshonite lava flows. Marieke Dechesne sent me the first reply, same afternoon as she received the newsletter.



\* \* \* \* \*

### ***Where is this Rock? – February***



This time, here is a montage of 3 pictures. My hint—it’s not far away from here. If you think you know where, write to Pete Modreski, [pmodreski@usgs.gov](mailto:pmodreski@usgs.gov) or 303-202-4766.

# CALL FOR PAPERS

ABSTRACT DEADLINE: April 15, 2016

## PETROLEUM HISTORY INSTITUTE 2016 ANNUAL SYMPOSIUM



**Casper, Wyoming**  
**“The Oil City”**  
**July 28-31, 2016**

**REGISTRATION AND EVENING RECEPTION**  
Thursday, July 28th, 2016

**PRESENTATIONS – ORAL AND POSTER**  
Friday, July 29th, 2016

Symposium Headquarters: the *Ramkota Hotel and Conference Center*, Casper  
Proceedings to be published in the 2016 volume of *Oil-Industry History*

### FIELD TRIP

Saturday July, 30th, 2016

Stops will include Teapot Dome, site of the 1920's Presidential scandal,  
and the giant Salt Creek Field, discovered 1889

For symposium details, see: [www.petroleumhistory.org](http://www.petroleumhistory.org)

### ABSTRACTS BEING ACCEPTED NOW

Please send abstracts to: Dr. William Brice - [wbrice@pitt.edu](mailto:wbrice@pitt.edu)  
or call Marilyn Black – 814-677-3152 ext. 105



## *Calendar of Coming Events*

**Mon., Feb. 8, 7:00 p.m., Epithermal silver veins, some thoughts on their exploration and genesis and exploration**, by John E. Dreier, DREGS monthly meeting, Berthoud Hall Room 241, Colorado School of Mines; social hour starts at 6:00 p.m. All are welcome.

**Fri., Feb. 12, 3:00 p.m.**, Earth Sciences Colloquium at the Denver Museum of Nature & Science, ", **Feathering Utahraptor: The real star of Jurassic Park**, by Jim Kirkland (Utah Geological Survey). In the Ricketson Auditorium for this lecture; all are welcome, museum admission is not required.

**Feb. 15-19, Colorado School of Mines Library, Annual Book Sale**, 9 a.m. – 4 p.m. daily. Arthur Lakes Library, 1400 Illinois St., CSM campus, Golden.

**Tues., Feb. 16, 10:30 a.m.**, USGS Rocky Mountain Science Seminar, **Applications of zircon geochronology from the Pleistocene to the Permian**, by Seth Burgess, USGS Menlo Park CA; Building 25 auditorium, Denver Federal Center, Lakewood CO. Visitors welcome; enter DFC through the main gate on Kipling St.; park east of Bldg. 25, enter the building through door E-14.

**Thurs., Feb. 18, 7:00 p.m.**, Colorado Scientific Society bimonthly meeting, **“The Weird and Wonderful Geology of Pluto and its Moons”**, by Dr. John Spencer, Southwest Research Institute, Boulder. No charge, all are welcome; Shepherd of the Hills Presbyterian Church, 11500 W. 20<sup>th</sup> Ave., Lakewood CO.

**Sun., Feb. 21, noon**, monthly meeting of the Florissant Scientific Society, **Rock Glaciers**, by Alex Paul, in Woodland Park, CO. Please see <http://www.fss-co.org/index.html> or contact Beth Simmons for the exact location.

**Feb. 26-28, Denver Gem and Mineral Guild, Gem, Mineral, and Jewelry Show**, at the Jefferson County Fairgrounds, Exhibit Building. No admission charge.

**Mon., Feb. 29, 11:30 a.m.-1:00 p.m.**, Denver Mining Club weekly luncheon meeting, **Rare Earth Occurrences near the K/T Boundary, Raton Basin, South-central Colorado**, by Rex Bryan, Senior Geostatistician, Tetra Tech, Inc. At Golden Corral Buffet & Grill, 3677 South Santa Fe Dr., Sheridan, CO (southwest side of Santa Fe Dr. south of Hampden Ave.); all are welcome; purchase of buffet lunch is required. See [www.denverminingclub.org](http://www.denverminingclub.org).

**Thurs., Mar. 10, 7:30 p.m.**, Friends of Mineralogy, Colorado Chapter, bimonthly meeting, at Denver Museum of Nature and Science, VIP Room. Special invited speaker, Jeff Scovil, internationally famous mineral photographer; **“The Best of Colorado Minerals”**.

**Thurs., Mar. 17**, Colorado Scientific Society March meeting; topic TBA.

**Apr. 1-3, Fort Collins Rockhounds Gem and Mineral Show**, at the McKee 4-H Building, Larimer County Fairgrounds, I-25 exit 259.

**April 7-11, California pegmatites field trip**, sponsored by the Friends of the Colorado School of Mines Geology Museum. This trip will include attendance at the annual one-day Sinkankas Gemstone Symposium sponsored by GIA; a guided tour of the Los Angeles County Natural History Museum; a tour of the GIA (Gemological Institute of America) headquarters in Carlsbad, CA; and underground visits to two or three gem pegmatite mines in San Diego County. For more information, see the Friends page at <https://www.facebook.com/LikeCSMGeoMuseum/>. You must be a Friends of the CSM Museum member to take part in the trip, but, anyone may join! There is no fee for the trip, other than your own payment of costs for the symposium registration, museum entry, and your own airfare, lodging, and meals.

**Thurs., April 14**, the Colorado Scientific Society annual Past Presidents Dinner (to honor & introduce past presidents of the society; all are invited to attend) will be held at White Fence Farm, Lakewood, CO. Details will follow. The speaker will be Matt Silverman, on **“Tempest at Teapot Dome, Wyoming: the Greatest Political Scandal in the**

**History of the American Oil Industry**". (See the announcement in this newsletter for the Petroleum History Institute 2016 Annual Symposium, in Casper, WY, July 28-31.

The "2<sup>nd</sup> Eugene E. Foord Symposium on Pegmatites" will take place on the CSM campus, Golden, CO, July 15-19, 2016. There will be a welcoming reception, two days of oral and poster presentations, and two days of field trips to Colorado pegmatite localities. Look for further information on the Friends of the Colorado School of Mines Geology Museum page, <https://www.facebook.com/LikeCSMGeoMuseum/>. Pegmatite researchers from around the country are expected to attend, as well as local presenters. All will be welcome to attend. If you would like to receive future updates about the symposium or would like to offer to present a paper, please contact Mark Jacobson, markivanjacobson@gmail.com, or Pete Modreski, pmodreski@usgs.gov. See the attached full-page flier.

#### ***Special exhibits in 2016:***

A new "**Critical Materials**" Exhibit in The Colorado School of Mines Geology Museum is now open. The exhibit highlights critical materials and rare-earth elements - including the minerals the elements can be derived from - essential to the development of advanced technology and energy. The exhibit is a joint project of the Critical Materials Institute at the School of Mines and the Colorado School of Mines Geology Museum. Mandi Hutchinson, graduate student at CSM, played a major role in planning and design of the exhibit. The exhibit focuses on the elements Li, Y, Te, Nd, Eu, Tb, Dy, their minerals, and their uses in technology. You'll find the exhibit downstairs in the museum, near the Gift Shop.

**Steps in Stone: Walking Through Time**, at the University of Colorado Museum of Natural History, CU campus, Boulder, was open throughout 2015 and closes this month; Sun., Jan. 24 (10 a.m. – 4 p.m.) will be the **LAST** day to see this exhibit. The CU Museum, always free admission, is open 9-5 weekdays, 9-4 Saturdays, 10-4 Sunday; see <http://cumuseum.colorado.edu/>. In February, this exhibit of fossil trackways will be moving to the CU-South Denver Campus Museum\*.

\*The CU South Denver Campus Museum, Liniger Building, is now part of The Wildlife Experience, at 10035 S. Peoria St., Parker, CO. [*This all was new news to me—ed.*] "The Wildlife Experience—now part of CU South Denver—is an art and natural history museum that is home to an impressive wildlife art collection and interactive, educational displays including Globeology, Science on a Sphere and special exhibits." Open 9:30 a.m. – 5:00 p.m. daily; there is an admission charge. See <http://southdenver.cu.edu/visit-the-museum/visitor-info/>.

**Unearthed: Ancient Life in the Boulder Valley**, at the at the University of Colorado Museum of Natural History (Henderson Building; in the Anthropology Hall), CU campus, Boulder, "This new exhibit features a collection of 80+ stone tools known as The Mahaffy Cache that was found in a Boulder backyard in 2007. The artifacts were studied by CU Boulder Professor of Archaeology Doug Bamforth, Ph.D. He dates the tools to 13,000 years ago at the end of the last ice age. The discovery of stone tools from the late Pleistocene within the city limits of Boulder is a rare event in archaeology. This is the first time the tools will be on display for the public. The exhibit includes interactive elements and video, as well as replicas of the tools that visitors can pick up and hold." Open daily, no admission charge.

**Western Museum of Mining & Industry, Colorado Springs:** Heritage Lecture and Exhibit Opening, Thursday, February 11, 6:00 p.m. – "**Cheyenne Mountain at 50: Military Icon, Engineering Marvel**". "Join WMMI and officials from NORAD on Thursday February 11th for a new exhibit opening and lecture series about the construction of the North American Aerospace Defense Command center in Cheyenne Mountain. Lecture details will be announced soon. Heritage Lectures at WMMI are always free. The exhibit opens at 6pm and the lecture begins at 7 pm. Free, but RSVP is required at [rsvp@wmmi.org](mailto:rsvp@wmmi.org) or 719-488-0880.

#### ***For more lecture series during the year see:***

Colorado School of Mines, Van Tuyl Lecture Series (Tuesdays, 4 p.m.) see [http://inside.mines.edu/GE\\_Lecture-Series](http://inside.mines.edu/GE_Lecture-Series)  
CSU Dept. of Geoscience Seminars (Fridays, 4 p.m.), see <http://warnercnr.colostate.edu/geo-news-and-events/departments-seminars>

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

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

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

Florissant Scientific Society (monthly, various Front Range locations), <http://www.fss-co.org/index.html>

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

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

**CSS Meeting Dates for 2016** (normally the 3<sup>rd</sup> Thursday of the month; subject to change if need arises)

January 21  
February 18  
March 17  
April 14 (Past Presidents' Dinner)  
May 19  
September 15  
October 20  
November 17  
December 15

**2015 CSS Elected Officers**

President.....Peter Barkmann, 303-384-2642, barkmann@mines.edu  
President Elect.....Marith Reheis, 303-277-1843, marith16@gmail.com  
Treasurer.....Don Sweetkind, 303-236-1828, dsweetkind@usgs.gov  
Secretary.....Lisa Fisher, 303-215-0480, lisa.fisher@escalantemines.com  
Past President.....Paul Morgan, 303-384-2648, morgan@mines.edu

**Councilors**

2014-2016: Celia Greenman, celia.greenman@earthlink.net  
2014-2016: Chris Morrison, chris-morrison@comcast.net  
2015-2017: Bruce Geller, bgeller@mines.edu, 303-273-3823  
2015-2017 Pete Modreski, pmodreski@usgs.com, 303-202-4766  
2016-2018: Linda Barton Cronoble, lbarton1611@gmail.com, 720-338-1237  
2016-2018: Melissa Foster, melissa.ann.foster@gmail.com, 707-498-2484

**Committee Chairpersons**

Best Student Paper Competition: Paul Morgan, 303-384-2648, morgan@mines.edu  
Database Manager: Don Sweetkind, 303-236-1828, dsweetkind@usgs.gov  
Field Trips: Cal Ruleman, 303-236-7804, cruleman@usgs.gov  
History: Beth Simmons, cloverknoll@comcast.net  
Hospitality: Jack Krajewski, gjack08@gmail.com  
Membership/Mentor: Liz Pesce, pesce.e@gmail.com  
Student Research Grants: Paul Morgan, 303-384-2648, morgan@mines.edu  
Newsletter Editor: Pete Modreski, 303-202-4766, pmodreski@aol.com or pmodreski@usgs.gov  
Outreach: Linda Barton Cronoble, 720-338-1237, lbarton1611@gmail.com  
Program: Thom Fisher, thom.fisher@escalantemines.com, 303-674-1233  
Publicity: Open  
State Science Fair: Chuck Weisenberg, 303-238-8806, cweisnrg@msn.com  
Webmaster: Barb Warden, 303-278-2701, bwarden@tablemtn.com

Colorado Scientific Society, P.O. Box 150495, Lakewood CO 80215-0495 <http://www.coloscisoc.org>

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***Did we remember to remind you to pay your dues for 2016? Thank you!***



**The Friends of the Colorado School of Mines Geology Museum, the Friends of Mineralogy Colorado Chapter, and the Denver Region Exploration Geologists' Society** invite all academics, industry professionals, pegmatite researchers, geologists, mineralogists, mineral collectors, lay persons, and students to attend the **2nd Eugene E. Foord Pegmatite Symposium, July 15 -19, 2016**. There will be two full days of talks (July 16-17), followed by two days of field trips (July 18-19). The talks will be held on the Colorado School of Mines campus, Golden, Colorado. Invited speakers include:

- Dr. David London, University of Oklahoma, author of “Pegmatites”
- Dr. William “Skip” Simmons, Univ. of New Orleans & Maine Mineral Museum, co-author of “Pegmatology”
- Dr. Michael Wise, Smithsonian Institute

**This exciting Symposium** will cover pegmatite geology and mineralogy in the Colorado region, as well as world-wide occurrences, pegmatite genesis, pegmatite mineralogy/geochemistry, structure and crystallography, and pegmatite mining histories. The registration fee of \$100 will include a Friday night reception, two days of presentations, a black and white hard copy proceedings volume, a color digital proceedings volume, and free field trips (travel will be by car-pooling). Registration for full time university (student ID required) or high school students is \$50. Registration fees are waived for invited speakers and field trip leaders. Speakers, poster presenters and field trip leaders will be provided with a one year (2016-2017) free membership in both Friends of the CSM Geology Museum and the Friends of Mineralogy Colorado Chapter. A Saturday evening banquet and box lunches for the field trips will be optional at cost. Housing will be available in single or double room college dormitories on the CSM campus as well as in motels/hotels near Golden. Look for further information on the Friends of the CSM Museum page, <https://www.facebook.com/LikeCSMGeoMuseum/> ; the symposium website <http://www.colorado.edu/symposium/pegmatite/> will have full registration details as soon as they are available. To receive future updates about the symposium or to offer to present a paper, please contact Mark Jacobson, [markivanjacobson@gmail.com](mailto:markivanjacobson@gmail.com), or Pete Modreski, [pmodreski@usgs.gov](mailto:pmodreski@usgs.gov). Suggested presentation or poster titles should be submitted by March 1, 2016; abstracts will be required by May 15, 2016. Please see full Call for Papers information on the Friends of the Museum facebook page.

**Below is a tentative list of field trips** which we hope to include in the conference. Though some of these have been confirmed, many are still dependent on access permission and enlistment of suitable trip leaders and, once a list is circulated to registrants, on sufficient signup preference among registrants to hold each trip. Each trip will be limited to about 20 participants; we will do our best to give everyone their top choice(s) on field trip participation, but may give preference to out-of-state attendees. Field trip participants will be required to sign a liability release. For third-party liability insurance participants will also need to belong to either an American Federation Mineral club that provides that insurance, Friends of the CSM Geology Museum, or the Friends of Mineralogy Colorado Chapter. If not already a member of a federation club, membership to either of the others can be purchased with registration.

- 1) Smoky Hawk amazonite-pegmatite claim and other adjacent Crystal Peak areas
- 2) Eight Mile Park area, Fremont County - Mica lode, Meyers, and School Section pegmatites
- 3) Devils Hole area, Fremont County - Devils Hole and Chief Lithia pegmatites
- 4) Clear Creek area pegmatites - Bald Mountain (inspection only), Burroughs, other pegmatites
- 5) Southern Crystal Mountain district - Hyatt and Storm Mountain beryl and phosphate pegmatites
- 6) Northern Crystal Mountain district - Big Boulder, Bull Elk, Sherwood pegmatites
- 7) Extreme northern Crystal Mountain district: Crystal Mountain and Wisdom Ranch pegmatites
- 8) Micanite district, Fremont & Park Counties - Rose Dawn and Climax Mica pegmatites
- 9) Trout Creek Pass district - Clora May, Crystal no. 8 (Luella), and Yard pegmatites
- 10) South Platte district - Little Patsy, Oregon, Big Bertha, and Luster or White Cloud pegmatites
- 11) St. Peters Dome area - Alkali granite pegmatites with cryolite, riebeckite, astrophyllite, zircon
- 12) Platt pegmatite, southeast of Encampment, Wyoming, rich in radioactive minerals
- 13) Quartz Creek district - Brown Derby and Bazooka lithium pegmatites, Gunnison County



# Colorado Scientific Society

## Application and Membership Update Dues and Funds Contributions

Date \_\_\_\_\_

New Member \_\_\_\_\_

Renewing Member \_\_\_\_\_

\_\_\_\_\_  
(email address)

\_\_\_\_\_  
(Telephone)

\_\_\_\_\_  
(Last Name)

\_\_\_\_\_  
(First Name)

\_\_\_\_\_  
(Initial)

\_\_\_\_\_  
(Address)

The success of most Society activities depends on volunteer help. Please circle any activities for which you can provide assistance. We will pass your name on to the appropriate Committee Chairperson.

Field Trips  
Fund Raising

History  
Newsletter

Outreach  
Program/Talks

### Annual Dues (January – December)

Regular Members \$20 \_\_\_\_\_

Corresponding Members \$10 \_\_\_\_\_

Student Members \$5 \_\_\_\_\_

**Memorial Funds:** These funds support research grants to graduate students in the Earth Sciences throughout the nation. *Please note if contribution is made in the memory of an individual.*

Ogden Tweto Memorial Fund \_\_\_\_\_

Steven Oriel Memorial Fund \_\_\_\_\_

Edwin Eckel Memorial Fund \_\_\_\_\_

Bill Pierce-Heart Mountain Fund \_\_\_\_\_

George Snyder Memorial Fund \_\_\_\_\_

Chuck Pillmore Memorial Fund \_\_\_\_\_

### Endowment Fund:

This fund is used to support the Society's monthly meetings and newsletter, field trips, family night, annual Emmons Lecture, invited speaker honorarium, and special activities.

**TOTAL CONTRIBUTIONS (DUES AND FUNDS):** \_\_\_\_\_

Please make your checks payable to the:  
*Colorado Scientific Society*

Send this form & your check to:  
**Colorado Scientific Society**  
**P.O. Box 150495**  
**Lakewood, CO 80215-0495**

Or register and pay on-line using PayPal at:

<http://www.coloscisoc.org/membership/duespaypal.htm>