Friends of Mineralogy-Colorado Chapter
P.O. Box 5276
Golden, CO 80401-5276

Friends of Mineralogy, Colorado Chapter Newsletter – May 2012

Next meeting May 10th then our summer break followed by September 6th, 2012 meeting at the Denver Museum of Nature and Science

2001 Colorado Blvd., Denver, CO

Enter the museum via the staff/security entrance, to the left of the main entrance doors on the north side of the museum. Security staff will direct you to the Meeting Room

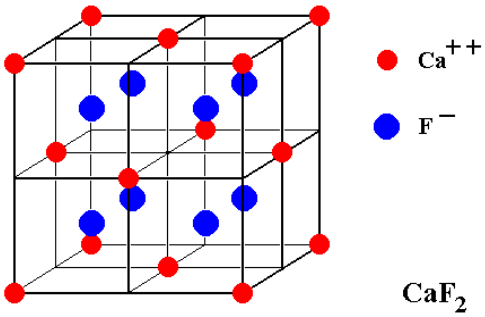
(Board meeting 6:30-7:30)

Crystallography, Color Centers and Thermoluminescence in certain Colorado Fluorites

by W. H. Hutchinson, J. Self
Thursday, May 10, 7:30 p.m.
Denver Museum of Nature & Science

All are invited and welcome to attend; no admission charge

We will begin with a brief discussion on the atomic structure of Fluorite and gain a level of comfort understanding of the ions Fluorine and Chlorine and how they make up the mineral Fluorite. The talk will be a step by step understanding of the mineral fluorite , it's color and properties.



Partial dodecahedral fluorite crystal with 3" crystal face. South Platte District
Photo and specimen William Hutchinson

A discussion of color and how it is perceived by preferential absorption. The elements that typically create color in minerals and the difference between idiochromatic and allochromatic minerals.

Malachite is idiochromatic

Beryl is allochromatic

An introduction into color centers and how they occur through differing processes. Here is an excellent web page to help explain the color in minerals. http://nature.berkeley.edu/classes/eps2//wisc/Lect7.html

The following is adopted from
http://minerals.gps.caltech.edu/color_causes/Metal_Ion/index.html

Colors from metal ions in minerals

All of the following examples of colored minerals have color due to metal ions. Ions of the first row transition elements (Ti to Cu) are normally responsible for color in these minerals. These ions have electrons in the five 3d orbitals. In the crystallographic sites found in minerals, the 3d orbitals split into different energies. Visible light interacts with these electrons and causes them to be excited to higher energy orbitals. The wavelengths that cause these transitions are subtracted from the incident light resulting in color.

First Row Metals; Some examples.

- Ca^{2+}, Sc^{3+}, and Ti^{4+} by themselves all cause no color in minerals. They have no electrons in d-orbitals.
- Ti^{3+} by itself is not a factor in the coloration of most terrestrial minerals. V^{3+} in grossular garnet (tsavorite variety from Kenya) causes the green color. In zoisite (tanzanite variety) it contributes to the color which varies depending upon the direction in which you view the crystal (pleochroism).
- VO^{2+} causes bright blue color in a few minerals. Cavansite from India shows the typical blue color of this ion. Synthetic clinopyroxene grown from lithium vanadate flux can commonly incorporate this ion and cause blue color. In apophyllite the color is more green than blue.

- Cr^{3+} causes red and green colors. Cr^{3+} causes green color in emerald, synthetic orthopyroxene and jadeite. Red color from Cr^{3+} is seen in spinel from Burma and synthetic ruby.

- Mn^{3+} causes red and green colors in octahedral sites. Muscovite mica from Brazil containing is red as is Mn^{3+} in beryl from Utah, synthetic orthopyroxene, and piemontite from Whitewater, California. Andalusite containing Mn^{3+} is green. In the amphibole, tremolite, from New York, it produces a violet color.

- Mn^{2+} usually results in a pink color in octahedral sites. Rhodonite from Minas Gerais, Brazil, is a pyroxenoid containing $Mn^{2+}$and has the typical pink color of Mn^{2+} minerals. Rhodocrosite from Colorado has a high concentration of Mn^{2+} and a bright red color. At lower concentrations, Mn^{2+} causes pale pink color. When the Mn^{2+} is in a tetrahedral site, then yellow-green color results such as is the case with willemite.

- Mn^{4+} is normally encountered as black manganese oxides (MnO_2) such as pyrolusite and hollandite. A rare example in which it is present as individual ions is the yellow-green mineral, despujolsite. However, natural (or laboratory) irradiation of a manganese-containing variety of the pyroxene spodumene, $LiAlSi_2O_6$ known as kunzite, will oxidize the manganese to Mn^{4+} that produces a green color in freshly mined kunzite from the Oceanview Mine and other localities. This color show significant change with the direction of linerally polarized light. The Mn^{4+} is unstable and will be reduced to Mn^{3+} after a few hours exposure to sunlight.

- Fe^{2+} in forsterite from San Carlos, Arizona, and in phosphophyllite from Bolivia is the ion responsible for the green color. In some minerals with high concentrations of Fe^{2+}, such as fayalite or orthopyroxene, the color is brown.

- Fe^{2+} in the square planar site of gillespite or eudialyte produces a rasberry red color.

- Fe^{2+} in the eight-coordinated site of pyrope garnet from Tanzania produces the near-red color.

- Fe^{3+} in octahedral sites causes only pale color when the Fe^{3+} ions are isolated from each other by intervening silicate ions, etc. Pale purple color is found in phosphates such as strengite and sulfates such as coquimbite. Yellow-green can be found in ferric silicates such as andradite garnet from Italy.

- Fe^{3+} is in the tetrahedral site of plagioclase feldspar from Lake County, Oregon, produces a pale yellow color. In an unusual variety of diopside containing Fe^{3+} in a tetrahedral site, it produces bright orange color in thin section.

- Co^{2+} in synthetic olivine and cobaltian calcite from the Kakanda Mine, Zaire, causes a typical reddish color. In tetrahedral sites, Co^{2+} causes blue color such is found in some spinels from Baffin Island.

- Ni^{2+} in synthetic olivine has the green color typical of Ni^{2+} in an octahedral site. If all the nickel is forced in to the larger M2 site by appropriate chemical substitution (in this case in a $LiScSiO_4$ olivine), the color is yellow, typical of Ni^{2+} in large, distorted sites.

- Cu^{2+} usually occupies sites distorted from octahedral geometry. It produces blue and green color in minerals such as azurite, malachite, aurichalcite and the blue elbaite tourmaline from Paraiba, Brazil.

Other Metal Ions

- Rare-earth elements (Ce, Pr, Nd) are occasionally factors in the color of minerals. They have narrow lines in the absorption spectra when they are in the normal 3+ oxidation state. Minerals with abundant rare earths often have brown to orange-brown colors. Rare earths can be seen in the spectra of many minerals.

Next we will look at a comparison of two green fluorite localities and compare the REE concentrations.

REE content of fluorite from the Rogerley Mine:

Element	Detected Range
Yttrium (Y)	93 - 272 ppm
Lanthanum (La)	193 - 274 ppm
Cerium (Ce)	56 - 150 ppm
Neodymium (Nd)	36 - 77 ppm
Samarium (Sm)	62 - 88 ppm
Europium (Eu)	6 - 31 ppm
Gadolinium (Gd)	48 - 89 ppm
Dysprosium (Dy)	6 - 14 ppm
Erbium (Er)	14 - 24 ppm
Ytterbium (Yb)	12 - 25 ppm

The overall REE content pattern when normalized to chondrite concentrations showed little variation between the various colors of fluorite. This suggests that, while the REE content may be responsible for the strong daylight and UV fluorescence, these elements are probably not the primary chromophores in the Rogerley Mine fluorite

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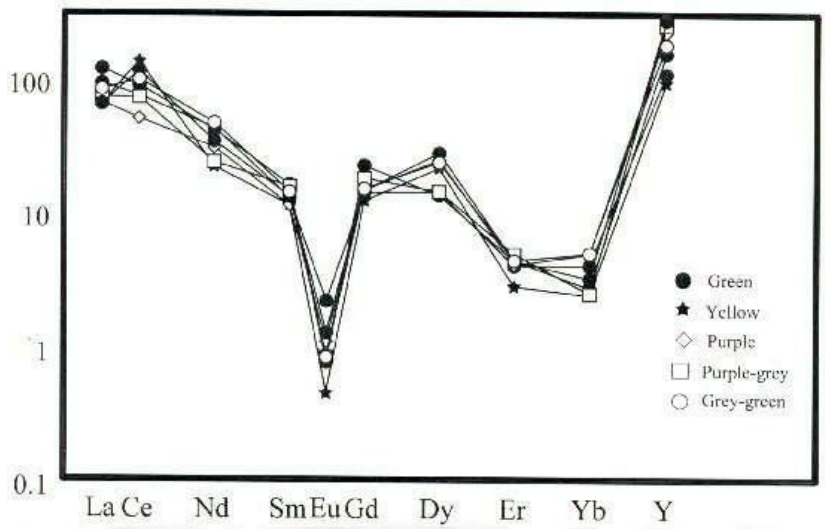


A chondrite-normalized plot of the rare earth element (REE) concentrations for all colors of fluorite currently found in the Rogerley Mine. Green fluorite is from the cavities in the flats, the other colors are from cavities in the Greenbank vein. Analyses conducted by Al Falster of the University of New Orleans Department of Geology and Geophysics.

Green Fluorite Rare Earth Analysis
Jeff Self's Claim
Park County, Colorado

CaF2

Element	ppm		Element	ppm	
Yttrium	843		Europium		1
Scandium		<2.37	Gadolinium		27
Rubidium		.078	Terbium	6	
Strontium		41	Dysprosium		45
Niobium	.03		Holmium		10
Cesium	<.068		Erbium		32
Barium		<.735	Thulium	5	
Lanthanum		6	Ytterbium		38
Cerium		19	Lutetium		5
Praseodymium		3	Hafnium	<.127	
Neodymium		24	Tantalum		<.564
Samarium		17	Thorium	<.125	
			Uranium	.125	

Analysis by University of Colorado Boulder Geology Department

From;

Rare-earth elements, thermal history, and the colour of natural fluorites

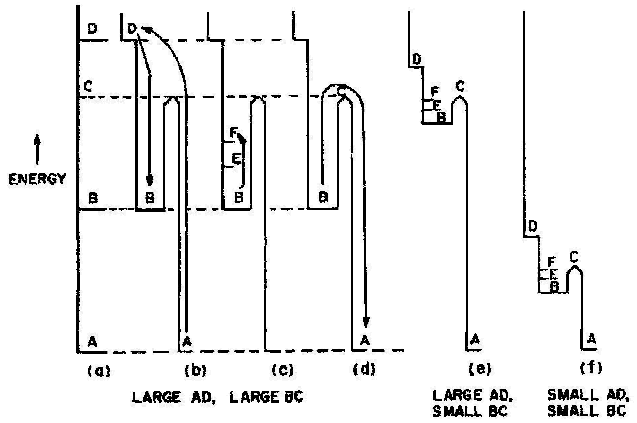
D. L. NALDRETT', LACHAINE and NALDRETT

Revision accepted March 23, 1987

A review of fluorescence and phosphorescence.

The probable explanation of the color of natural fluorites appears from a study of thermoluminescence (TL). The charge compensation required when a trivalent REE ion has substituted for a divalent calcium ion is provided, for example, by an extra F- occupying an interstitial position in the fluorite lattice, or 02- substituting for a lattice F-, or Na+ replacing a lattice Ca2+, etc. The color of fluorite is initially produced by ionizing radiation that has removed an electron from a fluorine ion, F-, or from an oxygen ion, 02-, the released electrons then having reduced trivalent REE ions to divalent REE ions, most of which absorb visible light. The remaining neutral fluorine atom, FO, or monovalent oxygen ion, 0-, represent "holes" that can attract electrons, but that are held in various "traps" in the fluorite lattice. As the temperature is raised, as in the TL process, traps are successively emptied as their activation energies a& reached. On being released, the "hole" can extract an electron from a divalent REE ion, leaving a trivalent REE ion in an excited state, which then reverts to a stable state by releasing energy as light (see, for example, Kiss and Staebler (1965) and Marfunin (1979 p. 234)). The color due to the divalent REE disappears and the absorption of trivalent REEs is very much less and does not contribute to color (Men and Pershan 1967~)The absorption spectra of divalent REE ions in a fluorite lattice have been determined by McClure and Kiss (1963) and by Men and Pershan (1967). The TL glow peaks of fluorite have been reported by many observers, e.g., Iwase (1933), Hill and Aron (1953), Moore 1 (1965), Blanchard (1966, 1967), Ratnam and Bose (1966), Men and Pershan (1967a, b), Kaufhold and Herr (1968), and Sunta (1970). The TL glow peaks fall into five main groups: I 60-80, 95 - 110, 130- 160, 190-270, and 290-375°C.

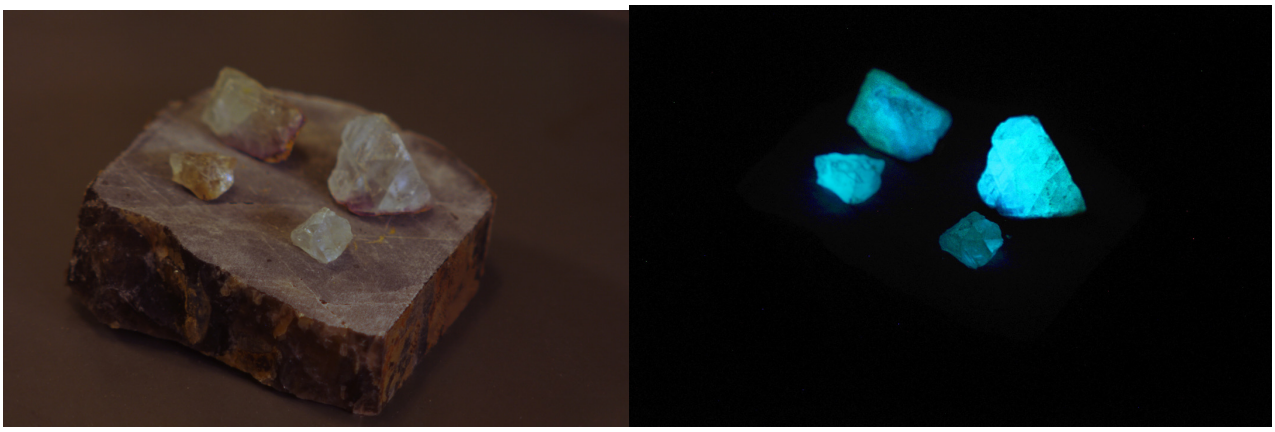
It is noteworthy that the wavelengths of light emitted at these various TL peaks show a regular change with increasing temperature, e.g., Iwase (1933) showed that natural fluorites emitted bands at 574, 542, and 478 nm below 200°C and that bands appeared at 436,420, and 380 nm only at temperatures above 200°C. It has been confirmed by the other observers mentioned above that the color-centers involving energy towards the red end of the color spectrum are involved first, and that the higher energy centers towards the blue and violet are discharged only at higher temperatures.



Energy-level schemes showing "traps" involved in phosphorescence, thermoluminescence, and bleaching color centers. American Mineralogist Vol 63

Our demonstration;

Our samples tonight come from the South Platte Rare Earth district near the old "Top of the World " campground in Jefferson County CO and The Western Eagle #2 owned by Donna Ware. Both fluorites have been analysis and show interesting correlations with other "green" fluorites around the world.



Fluorite from the South Platte district, unheated on a slab of quartz and then heated in the dark.

Fluorite from the Western Eagle #2

All are invited to attend! If you need more information or directions, please contact Pete Modreski, chapter president, pmodreski@usgs.gov or 303-202-4766

2011 FMCC Board of Directors:
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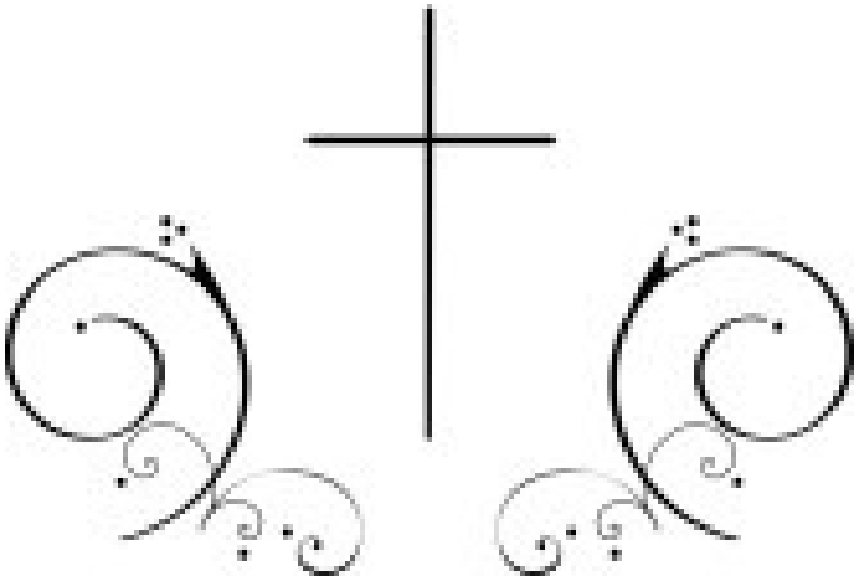
From the editor;

On Tuesday April 24th a dear friend of the rock and mineral community passed away. Bill Hayward was a well known and highly respected mineral specimen collector and dealer. He was a true renaissance man with interests in all aspects of the natural sciences and a fascination for orchids. He also was a veteran of WWII and college football player. Those of us who have seen his home and have been privileged enough to "rummage" through his treasures know that he had a story for each adventure, each pocket discovered and each mineral specimen found. He was there for the brass plaque that was placed on Mt Antero and is part of Colorado's mineral collecting history. I haven't been friends with Bill as long as many of you but over the last twenty years we have shared the common bond of digging up Earth's treasures. We had our trips into the field, dreams of the next great find and whispers of secrets taken to the grave. He had immense dedication to the field, whether collecting and documenting the specimens themselves or just accumulating the knowledge and lore of mineral collecting, especially in Colorado. His knowledge would have filled volumes. Some of the stories were a bit repetitive over the years but then out of no where he would state in a matter of fact voice "I told you about that garnet, or amazonite, or topaz locality didn't I?".... You never knew what he might dig up out that vault of knowledge that he carried around in his head. We will miss him.

The memorial service at the Wheat Ridge Lutheran Church was well represented by the mineral collecting community.

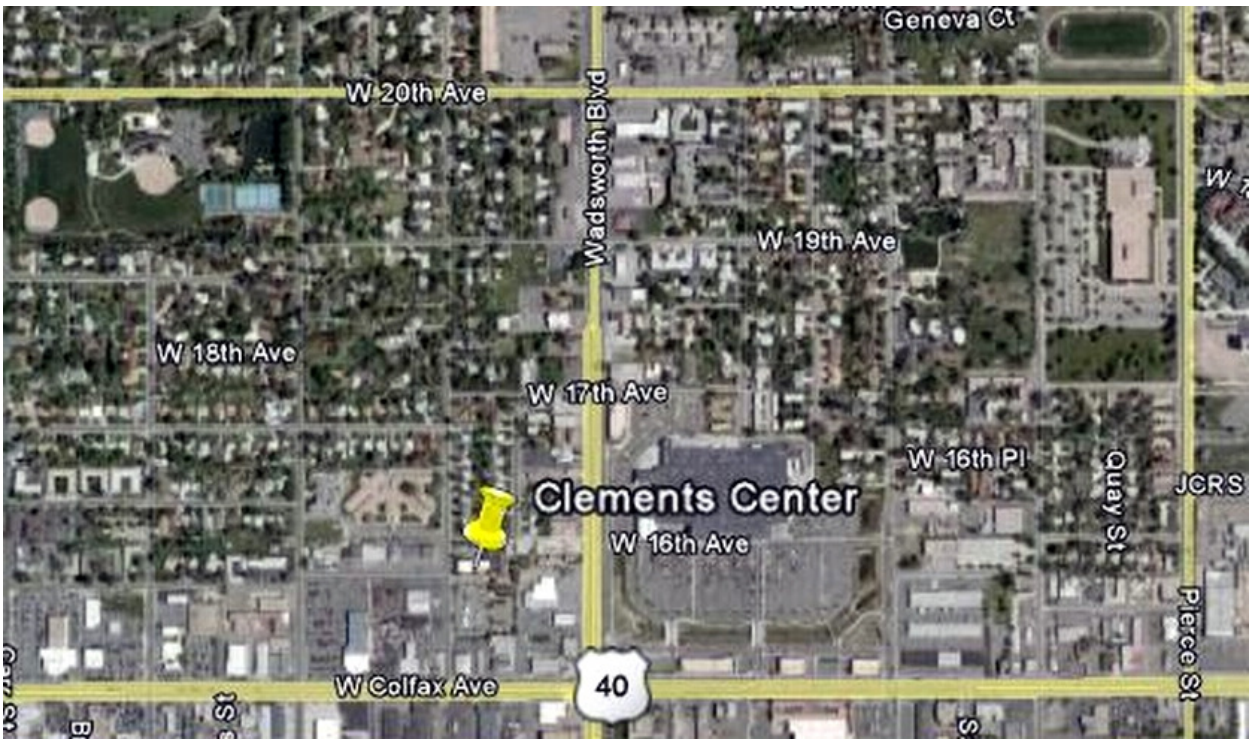


FRIENDS OF MINERALOGY
COLORADO CHAPTER
SILENT AUCTION
May 12th

The 2012 Silent Auction will be held at the same place as last year, the Clements Center, 1580 Yarrow Street near the intersection of Colfax and Wadsworth. Many mineral specimens, books and other mineral related paraphernalia will be available to bid on. The silent portion of the auction will be tables set up with specimens with bid sheets. The tables will be closed in an organized manner and they will be removed to tally the bids. The verbal auction will be held during this time and the specimens will be shown around the room to anyone wishing to bid on some of the better offerings at the auction.

Set-up will be at 11:00 to noon; Dealer set up at 12:00; Auction begins at 1:00;
Auction is over at 3:00 Check-out 3:00-4:00

Members are asked to bring finger foods and refreshments.



On the following page are bid slips for your convenience.

Our sincere thanks to Collector's Edge, Costigan's Minerals, Dan's Used Rocks, Joe Dorris, Self-a-Ware Minerals, and any other donor I may not be aware of at this time!

Silent Auction: Friends of Mineralogy
Colorado Chapter

Seller to complete first 3 items below
And fill in specimen description at top &
bottom of slip.

1. Minimum Bid _____
2. Seller # _____
(assigned at check-in)
3. Amount donated to FM (circle one)
20% 50% 100%

Description:_____
_____
_____
_____

Final bid $_____

To FM $_____ **to Seller $**_____

Bidder Number	Bid Amount		Bidder Number	Bid Amount

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Buyer's receipt
Description of auction item:_____
_____
_____

Final Bid Amount $_____

Silent Auction: Friends of Mineralogy
Colorado Chapter

Seller to complete first 3 items below
And fill in specimen description at top &
bottom of slip.

1. Minimum Bid _____
2. Seller # _____
(assigned at check-in)
3. Amount donated to FM (circle one)
20% 50% 100%

Description:_____
_____
_____
_____

Final bid $_____

To FM $_____ **to Seller $**_____

Bidder Number	Bid Amount		Bidder Number	Bid Amount

****

Buyer's receipt
Description of auction item:_____
_____
_____

Final Bid Amount $_____

MUSEUM MUSINGS:

Colorado School of Mines (CSM) Geology Museum Musings

Greetings Museumophiles! I have lots to report about our Museum this round. Since my last communication, we: had our combined Book Sale/Garage sale which was successful, held many receptions from across campus, received a grant from the Golden Civic Foundation, displayed at the Tucson, Denver Guild, and Fort Collins mineral shows; and have received many donations. In late April we closed the bidding on our Sealed Bid Auction and notified the winning bidders.

Our semester has recently wound down and expect five of our twelve Student Aides to graduate on 5/11. Knowing that, I had to interview another crop for staffing us this autumn, and then created summer schedules for the Aides who will help us during our heaviest visitation months.

The Advisory Council has met monthly and ratified an Optical Instruments Protocol. On-going projects involve cataloguing new specimens and improving our database.

I held weekly meetings with our Collections managers and volunteers. These folks ran our Book/Garage Sale and have been busy keeping our Gift Shop well stocked – so much so that our year to date sales are up 110% over the same period in 2011. Our volunteer ranks have now risen to 53, with the addition of several high school students. Our facebook fans number 529. We just revised our brochures and had 20,000 reprinted through the generosity of Jane and Marshall Crouch.

I have met monthly with our twelve Student Aides, who have led a vast majority of our tours this spring, helped with our Book/Garage Sale, and rung up all of our Gift Shop sales. All of our Student Aides received CPR and AED training.

One of our Student Aides, Patricia Littman, compiled our attendance data from 2011, which were really impressive. For example, we had over 20,500 visitors from all 50 states and 62 foreign countries. This means that we averaged 56 guests per day, an increase of 22% over 2010. Interestingly, over 80% of our guests were first-time visitors, and only 18% were K-12 school students.

Our Friends of the CSM Geology Museum support group is going strong. We now have over 112 members since our inception 2.5 years ago! Three FCSMGM members toured the Royal Ontario Museum, and ten members toured Marty Zinn's "rock room" in March. Several field trips are being planned for later this year and FCSMGM members receive 20% discounts in our Gift Shop.

As for upcoming events, Secretary of the Interior, Ken Salazar will be on campus 5/21 at 1:30 P.M. to formally designate Stop #2 of our Bob Weimer Geology Trail as a National Natural Landmark. All are welcome to attend the festivities.

Colorado barite is the mineral we will be featuring in one of our display cases later this year and we invite all barite collectors to submit photos of their own specimens, for consideration as loans to our Museum for the period 8/2012 to 10/2013. We realize that many of you may have qualifying candidates, so our Museum staff reserves the right to select the very best loans for this display. Our Annual Open House is scheduled for September 12, 2012 from 6 to 9 P.M.

Come visit our Museum during our normal hours: Monday – Saturday 9 A.M. to 4 P.M., Sundays 1 P.M. – 4 P.M., except for certain legal and school holidays. Admission to our Museum is free (donations are greatly appreciated), but parking fees are required in our lots and on campus streets Mondays through Fridays before 5 P.M. From May 15th -August 15th, free parking is permitted in the neighborhood streets north and east of the Museum.

Wow….

Bruce Geller
303-273-3823

MINERAL ANNOUNCEMENTS:

Dear colleagues, educators, friends,

Here is an updated list of coming events related to geology and earth science, now through the summer; I've added notices of several new lectures in the coming couple of weeks. In addition to everything below, two notes:

(1) There is lately much concern in the geologic community about a proposed bill being discussed right now in the Colorado Legislature, HB 12-1355, which would transfer the Colorado Geological Survey from its present position within the Colorado Department of Natural Resources, to the Colorado School of Mines, possibly with considerably reduced funding. I do not have a direct link to give for current status of this proposal but, if you are interested or concerned, you might inquire from your own State representative(s).

(2) We at the USGS received a request from a high school science teacher in Eagle County who is teaching a unit on Colorado geology and "would LOVE to have an expert speak with the class and go into the field with us". If you, or someone you know who is located in or near the Eagle County area, might be able to do such a thing, you may contact me and I will pass you name on, or you may write directly to christina.gosselin@eagleschools.net . Thank you!

Wed., May 2, 4:00 p.m., CU Boulder Geological Sciences Colloquium, Benson Earth Science Building, Room 180, "**Arcs, Continents, and the Andesite Paradox, GeoPRISMS Distinguished Lecture**", by Steve Holbrook, University of Wyoming. "Please join us for our last colloquium of the semester. All are welcome. Refreshments will be served at 3:30 pm just outside Benson Room 380.

Thur., May 3, 12 noon, CU Dinosaur Tracks Museum, please see the note at the bottom of this email about this museum on the Auraria Campus, closing after May 10. Some of us who can make it, are going to try to visit the museum at noon on May 3, for a short guided tour; any who would care to are welcome to join us; contact me, Pete Modreski, pmodreski@usgs.gov, 303-202-4766, for more info.

Fri., May 4, 2:00 pm, "Please join us for a special talk on Friday, May 4th, at 2:00pm in Benson Room 380 (CU Boulder): "**Diamonds from the Alps: constraints on physical and chemical conditions during oceanic subduction"** by Jane Selverstone, University of New Mexico. Refreshments will be served just outside Room 380 at 1:30pm. All are welcome!"

Sat., May 5, Silent Auction, 11 a.m. – 3 p.m., held by the Colorado Mineral Society; Holy Shepherd Lutheran Church, 920 Kipling St. (3 blocks north of 6th Ave.), Lakewood; all are invited to attend.

Sat. & Sun., May 5-6, Crystal Specimen Sale, Ray Berry, 7513 Tudor Road (I-25 ext 149), Colorado Springs; 9 a.m. - 4 p.m.; for more info rayber@q.com or call 719-598-7877. Longtime mineral collector Ray Berry has a large collection of smoky quartz, amazonite, and related minerals from the Crystal Peak area.

Tues, May 8, 10:30 a.m., USGS Rocky Mountain Area Seminar Series, **"Epeirogenic Transients Related to Mantle Lithosphere Removal in the Southern Sierra Nevada Region"** by Jason Saleeby, California Institute of Technology. Building 25 auditorium, Denver Federal Center. Visitors are welcome to attend.

Thur., May 10, 7:30 p.m., **Friends of Mineralogy, Colorado Chapter**, bimonthly meeting. Topic, "**Color and Luminescence of Colorado Fluorite**" by Bill Hutchinson and Jeff Self. At the Denver Museum of Nature and Science, VIP Room. All interested persons are welcome to attend; enter the Museum via the staff & security desk

entrance to the left of the main doors on the north side.

Sat., May 12, "Dinosaur Discovery Day", 9 a.m. – 3 p.m., the first free public tour day of the year at Dinosaur Ridge, Morrison, CO, featuring **Boy Scout Day**; Scouts or Scout groups are encouraged to register in advance; "An opportunity for Scouts at all levels to satisfy their geology requirements and earn pins, belt loops and badges. More than 60 earth scientists and other volunteers, including certified merit badge counselors, assist with the event."; see http://dinoridge.org/scoutdays.html . All others are welcome to attend too. "Parking and check-in will be north of the Visitor Center at the Thunder Valley Motocross south entrance off of Rooney Road (for Scout sign-ups on day of event). Parking and check-in will NOT be available at the Dinosaur Ridge Visitor Center. NOTE: please do not drop off any scouts at the Visitor Center prior to parking as the check-in area is at the parking lot. Parking is $5 per car paid as you enter." [Note, DDD's take place on the 2nd Saturday of each month throughout the summer till October; Oct. 13 will be Girl Scout Day at Dino Ridge.]

Sat., May 12, Silent Auction, 12:00-3:00 p.m., sponsored by the Friends of Mineralogy, Colorado Chapter; Clements Community Center, 1580 Yarrow St., Lakewood CO (just NW of Colfax & Wadsworth); all are invited to come.

Mon., May 14, 7:00 p.m., **Rare Earth Element Associations within Hydrothermal Uraninite Ores from the Schwartzwalder Mine** , by Jim Paschis; monthly meeting of the Denver Region Exploration Geologists' Society, Berthoud Hall Room 241, Colorado School of Mines; social hour 6:00-7:00 p.m., presentation at 7:00; for more info and an abstract see http://www.dregs.org/abstracts.html "After this short presentation by Jim Paschis we will have a "Name That Rock" session. Bring a rock(s) of your choice to examine/discuss with your
colleagues. These rocks or cores may be ones that you have questions about, are controversial, that may be a challenge to identify, or completely unknown. Bring a hand lens." All are welcome to come.

Tues., May 15, noon, "**Climate Realism: Alarmism Exposed**", by Mr. Terry Donze, Independent Geophysicist, Denver; CO-AIPG (American Association of Professional Geologists) May Luncheon. At Wynkoop Brewing Company, 1634 18th St., Morey/Brown Room, Denver; lunch at noon, speaker at 12:30 p.m. Luncheon $30 per person with advance reservation, $35 at the door, $5 walk-ins for talk only. Reservations: Contact Steve Sonnenberg, sasonnenbg@aol.com or 303-895-7663 by noon on May 11. "This lecture was scheduled for Metro State College in Denver in April, but was cancelled there. We are fortunate to be able to have it at our May luncheon instead."

Thur., May 17, 7:00 p.m., monthly meeting of the Colorado Scientific Society; two presentations by Dr. Warren Hamilton, Distinguished Senior Scientist, Colorado School of Mines: **The Ancient Surface of Venus is Saturated with Impact Structures, and its Lowlands are Covered with Marine Sediments**; and, **Global Climate Change, a Tectonicist's Perspective**. At Shepherd of the Hills Presbyterian Church, 20th Ave. at Simms St., Lakewood; see http://www.coloscisoc.org/ for more details. All are welcome to attend.

Fri-Sat-Sun, May 19-20, Cheyenne Mineral & Gem Show, held at American Legion Post #6, 2001 E. Lincolnway, Cheyenne, WY; sponsored by the Cheyenne Gem and Mineral Society. As my friend from that club points out, "Cheyenne is only 12 miles from Colorado!".

Sat., June 9, 9 a.m. - 3 p.m., monthly **Dinosaur Discovery Day** at Dinosaur Ridge, Morrison CO. See www.dinoridge.org for more info.

Sat., June 16, 9 a.m. to 3 p.m., **GEOdyssey's Annual Mineral & Fossil Home Sale**, 15339 West Ellsworth Drive, Golden, CO 80401 (303-279-5504). "A wide variety of individual specimens and low-priced flats will be available. All specimens are a minimum of 10% off, with bigger discounts for volume purchases. We'll have many specimens priced at 50% off and at $5 or less. Drinks and snacks provided. Directions: from west 6th Avenue, exit onto Indiana Street and go south on Indiana. Drive into Mesa View Estates. Turn right at the first street (McIntyre Circle) and right at the next street (Ellsworth Drive). We are about midway down the street on the left." (from Pat Tucci)

Fri-Sat-Sun, June 22-24, **Pikes Peak Gem and Mineral Show** and **Rock Fair** held at the Western Museum of Mining and Industry, Colorado Springs. See http://www.csms.us/ or www.wmmi.org for more info.

Aug. 9-12, **"Contin-Tail" outdoor Rock Show,** Rodeo Grounds, Buena Vista, CO; see www.coloradorocks.org

Aug. 17-19, Lake George (outdoor) Gem & Mineral Show, Lake George, Park County, CO; see http://www.lggmclub.org/

Through May 7, SPRING MEGA SALE at the USGS STORE: "Over 60,000 selected items for only $1 !!! Buy selected USGS Maps and Products at wholesale prices. Have questions? Please call 1-888-ASK-USGS (1-888-275-8747) Select Option 1, or email us at: usgsstore@usgs.gov.
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*All sales are final.
*While quantities last.

Dinosaur Tracks Museum – Open Through May 10: The CU-Denver Dinosaur Tracks Museum is going to close permanently at the end of May. For the remainder of the spring semester, through May 10, the museum will be open to the public from noon to 5:00 p.m., Mon.–Thurs. or by special appointment. After the end of the spring semester (May 14–31), it will be open only when available by special appointment. The museum holds the largest collection of fossil footprints anywhere. It is located in the basement of St. Cajetan's Church on the Auraria Campus. Admission is free. Now is a good time to go see the track displays, which include both original and casts of tracks and trackways, of dinosaurs and of other fossil animals; it will likely be several years before the museum is reestablished at a new location. For more information or to schedule an appointment [not required], contact the museum office at 303-556-5261 or email: dinotracksmuseum@ucdenver.edu . See http://www.ahec.edu/campusmaps/ahec3d.pdf for an Auraria campus and parking map.

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Meeting Dates for 2012
The dates for our 2012 meetings will be May 10th, Sep 6th, Nov 15th.
Membership in FMCC and National FM is $13 for 2012.
Payment by check can be sent to our Treasurer or any Board member.

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