EARTHQUAKE
e-Newsletter about what's movin' and shakin' at the Earth Science Museum

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ESM's Smartphone Minerals Handout Included in New Critical Materials Institute Exhibit

By Harvey Jong

The Earth Science Museum's (ESM) display on Smartphone Minerals created quite an impression at last year's Tucson Gem and Mineral Show. Show visitors and museum professionals were fascinated by the variety of minerals involved in producing a smart phone.

Smartphone Minerals Display

The display highlighted 24 chemical elements, their mineral sources, and how they are used in different smart phone parts.

Interest in the exhibit continues as the ESM was recently contacted by Mandi Hutchinson, a geology graduate student and exhibit designer, at the Colorado School of Mines. Hutchinson is working on a display on Critical Materials at the Colorado School of Mines (CSM) Geology Museum.

The Critical Materials display is a joint project of the U.S. Department of Energy's Critical Materials Institute and the CSM Geology Museum. It represents a prototype for educational professionals interested in constructing similar exhibits and conveys the story of key materials, such as rare earth elements, and how they relate to technologies in everyday life. Specifically, the exhibit highlights the source, process, and products associated with critical materials. The ESM's Smartphone Minerals was a natural fit, and the handout from our display is part of the new exhibit. A preview of the exhibit was held at the Geology Museum on December 9, and the handout was a favorite among local visitors. Final touches are being added for a grand opening scheduled in February.

Critical Materials Exhibit at the CSM Geology Museum

This exhibit highlights how critical materials are used in everyday life and includes the ESM's Smartphone Minerals handout. The handout's location is indicated by the blue circle. See below for a larger, more visible version of the graphic.
Image courtesy of Mandi Hutchinson, via http://cmi.ameslab.gov

ESM Smartphone Minerals Handout

The Critical Materials Institute is involved in a variety of other education and outreach activities across the United States.

CMI Staff at the 2015 Colorado Energy Expo Staff members talk to some of the hundreds of middle and high school students who attended the Expo. Note that the materials used in the discussions included the ESM Smartphone Minerals handout.
Image courtesy of Critical Materials Institute - http://cmi.ameslab.gov

The CMI website provides K-12 educational resources and includes a link to the video of the Smartphone Minerals display that Michael Conway of the Arizona Geological Survey captured at the Tucson Show. (http://cmi.ameslab.gov/about/education/ed-resources-k12 under middle school resources)

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ESM Outreach Update for January:

By Mardy Zimmermann

The month of January began with the Flagg Show and cold and cloudy weather. The Earth Science Museum once again had a Fluorescent Mineral display in the black tent. This year showed a big increase in people viewing it. Harvey Jong reported that 1,831 people visited the display of Arizona's fluorescent minerals.

Harvey Jong, ESM President, ready for visitors to the ESM Fluorescent Mineral Display at the Flagg Gem and Mineral Show.

In addition, the AZ Leaverites and ESM set up the Egg Carton program and raised $825.

Participants waiting to purchase an egg carton to fill with samples.

With over 300 samples of rocks, minerals and fossils to choose from, participants found it difficult to decide which 12 specimens to obtain for their egg carton collection.
S. Cote photos

January is one of the slower months each school year, but with Lynne Dyer meeting at some preschools, Shirley Cote meeting with a Home School Group and me going to a couple Montessori schools we reached 316 school students. These groups tend to be smaller, but indicate that the ESM Outreach Program is diversifying. By the end of January, we made classroom presentation to 3,638 students and served 3,209 people at community events. These numbers reflect an increase over last year in both categories.

As the legislature began its session we are awaiting news from Senator Griffin about her bill to restore the Mining and Mineral Museum. At this point we have made progress in getting publicity out through CAMMAZ. Teachers and students really do want the Mining and Mineral Museum back.

Lynne and Terry Dyer's educational display at American Heritage Academy with their Girl Scout Troop & Family enjoying the displays.
Lynne Dyer Photos

ESM's educational outreach display at the Flagg Gem and Mineral Show
S. Cote Photos

Arizona Rocks 32

Text and photos by Ray Grant

Here are a couple more geological sites around Flagstaff to visit, when it is 110 degrees plus in Phoenix. Cinder cones are a fun place to try to climb (Of course this depends on your definition of fun.). There are hundreds of cinder cones in the San Francisco Peaks Volcanic Field.

On one of my first trips to Arizona you could still climb to the top of Sunset Crater, but because of worries about erosion the Park Service has stopped people from climbing it. The top is very interesting as there are still fumerole deposits from the eruption around 1064 AD (This date was given for many years, but recent studies have suggested other dates around that time.). The fumarole deposits contain several unusual sulfate minerals and sulfur. The Sunset Crater visitors center and the loop trail at the base of the crater are really good for learning about Arizona's most recent volcanic eruption.

If you want the experience of a very strenuous hike in loose cinders you can try the Lenox Crater trail in the Sunset Crater National Monument. It is about a mile to the top with lots of slipping and sliding like the Sunset Crater used to be. Another cinder cone you can climb is SP Crater with the same very strenuous climb and lots of slipping. It is west of Sunset Crater and a dirt road leads to it. You should check road conditions if not using four-wheel drive. SP Crater is reported to be 70,000 years old, but this date is uncertain. SP Crater is unusual because after the cinder cone formed there was a small eruption of lava that spattered over the crater rim. This hard rim has slowed the erosion of the crater. If you climb to he top you can see some of the twisted lava spatters, sometimes called volcanic bombs.

Sunset Crater

Sunset Crater from the rim

Fumaroles deposits on the top of Sunset Crater

Lenox Crater, via Google

SP Crater and its associated lava flow, via Google

Strawberry Crater northeast of Sunset Crater, via Google

Colton Crater just south of SP Crater with a cinder cone on its floor, via Google

AZ Rock & Gem Shows

Quartzsite Arizona Shows
Desert Gardens – Gem & Mineral
January 01 – February 28, 2016

Prospectors Panorama
January 02- January 15, 2016
QIA Pow Wow
Gem, minerals & jewelry
January 20 – January 24, 2016

Tyson Wells Rock & Gem Show
January 01 – January 10, 2016

Tyson Wells Sell-A-Rama
January 15 – January 24, 2016

Tucson Gem and Mineral Society
62nd Annual Tucson Gem and Mineral Show®
Shades of Blue: Minerals of the World
February 11 – 14, 2016
Thurs., Fri., Sat. 10-6
Sunday 10-5
Tucson Convention Center
260 S. Church Ave., Tucson
10 – 5 daily
Parking and Admission Fees

Apache Junction Rock and Gem Club
50th Annual Jewelry, Gem and Rock Show
February 20-21, 2016
Sat. 9-5, Sun. 10-4
Skyline High School Gymnasium
845 South Crismon Road;
$3 Admission, $1 Students, Children Free

Daisy Mountain Rock & Mineral Club
2016 Anthem Gem & Mineral Show
March 12-13, 2016
Sat. 9-5, Sun. 9-4
Admission $3
Boulder Creek High School
40404 N. Gavilan Peak Pkwy.
Anthem, AZ
Students/Seniors $2
Free Admission for children

Chuck Kominski's thumbnail collection, one of many who displayed at the Flagg Gem and Mineral Show, in preparation for competion at the Tucson Gem and Mineral Show.
S. Cote Photo

ESM's Upcoming Meeting

The Earth Science Museum's next scheduled Board meeting on February 16, 2016, at the Burton Barr Library, located near Central Ave. and McDowel in Phoenix at 6:30 p.m. in Rm. B. Everyone is welcome to attend.

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Join the Earth Science Museum's

IS IT TIME TO RENEW YOUR MEMBERSHIP?
Please renew today!

MANY THANKS TO OUR MAJOR DONORS!

AZ Leaverite Rock & Gem Society

Flagg Mineral Foundation
www.flaggmineralfoundation.org

Friends of the AZ Mining & Mineral Museum

Maricopa Lapidary Society
http://maricopalapidarysociety.com/

Mineralogical Society of AZ
www.mineralogicalsocietyarizona.org

White Mountain Gem & Mineral Club
www.whitemountain-azrockclub.org

Wickenburg Gem & Mineral Society
http://www.wickenburggms.org
www.facebook.com/pages/Wickenburg-Gem-and-Mineral-Society/111216602326438

Staples Foundation
www.staplesfoundation.org

Anita Aiston
Stan & Susan Celestian
Russ Hart
Will & Carol McDonald
Debbie Michalowski
Dennis & Georgia Zeutenhorst

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ESM Earth Science Investigation Team Membership Form

_____ New Member _____ Renewal

Membership levels:

_____ ESI Family $20

_____ ESI Individual $10

Membership benefits:

- Monthly e-newsletter *Earthquake*
- Official team membership card
- Knowledge that your contribution is making a difference in earth science education.

_ _ _ _ _ _ _ _ cut here _ _ _ _ _ _ _ _ _

Name: _____

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We're on the Web!

Visit us on *and at:*

www.earthsciencemuseum.org

Mission
Our Mission is to excite and inspire all generations about earth sciences through educational outreach.

Vision
We envision a community where students and the general public have curiosity about, passion for, and understanding of the underlying principles of earth sciences.

For more information about the ESM, how to become a member or how to arrange for a school visit or Community function, go to: www.earthsciencemuseum.org.

Please join us at the next ESM Board meeting Tuesday, February16, 2016, at the Burton Barr Library in Phoenix at 6:30 p.m. Rm. B.

THANK YOU FOR YOUR CONTINUING INTEREST & SUPPORT!!!

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