

Bulletin of the Mineralogical Society
of Southern California

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The Meeting of the Mineralogical Society of Southern California

Speaker Larissa Dobrzhinetskaya

Diamonds From Deep Subduction Zones Related to Continental Collisions

Friday, March 18, 2010 at 7:30 pm

**Geology Department, E-Building, Room 220
Pasadena City College**

1570 E Colorado Blvd., Pasadena

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March 18, 2011 Speaker & Subject

Diamonds From Deep Subduction Zones Related to Continental Collisions

Larissa Dobrzhinetskaya

Institute of geophysics and Planetary Physics

Department of earth Sciences

Geologists have “known” for many years that continental crust is buoyant and cannot be subducted very deep. Microdiamonds of 10-80 μm size discovered in the 1980’s within metamorphic rocks related to continental collisions clearly refute this statement, suggesting that material of continental crust has been subducted to a minimum depth of ~150 km (perhaps much more) and incorporated into mountain chains during tectonic exhumation. Over the past decade, the rapidly moving technological advancement has made it possible to look inside of these diamonds, and learn that they contain nanometric multiphase inclusions of crystalline and fluid matter, and are characterized by a “crustal” signature of carbon stable isotopes. Scanning and transmission electron microscopy, focused ion beam techniques, synchrotron infrared spectroscopy and nano secondary ion mass spectrometry studies of these diamonds provide evidence that they were crystallized from a supercritical carbon-oxygen-hydrogen fluid. These small diamonds preserve evidence of the pathway by which carbon and water can be conveyed down subduction zones to the deep upper mantle and back to the Earth’s surface.

About LARISSA DOBRZHINETSKAYA

EDUCATION

Ph. D. in geology and mineralogy, Moscow University, Moscow, Russia

M. S. and B.S. geology department of the Saint-Petersburg University, Saint-Petersburg, Russia

ACADEMIC POSITIONS:

1998-present –Professor (Adj.series) - Department of Earth Sciences, UC Riverside

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1998-1999, Senior Researcher, Los Alamos National Laboratory, New Mexico

1994-1998, Geophysicist. Institute of Geophysics and Planetary Physics, UC Riverside

HONORS

Fellow of American Association for Advancement in Science

Fellow of Geological Society of America

Fellow of Mineralogical Society of America

Fellow of Japanese Society for Promotion in Science

Distinguished Researcher Award, 2001, UC Riverside

GUEST LECTURES given at following institutions (last 5 years):

University of Clermont Ferrand, France, 2010; Charles University, Prague, Czech Republic, 2010; Graz University, Austria, 2010

Nanjing University, China, 2009; Peking University, China; Grenada University, Spain, 2009

Helmholtz GeoScience Center, Germany, 2008; Berlin Technical University, Germany, 2008; The

University of Tokyo, Japan, 2008, Tokyo Institute of Technology, Japan, 2008

UC Berkeley, 2007; The University of Iowa, 2007; Arizona State University, 2007.

AFFILIATION:

Member of American Geophysical Union

Member of American Association for the Advancement of Science

Member of Geological Society of America

Member of Mineralogical Society of America

SINERGETIC ACTIVITY:

Chair of Education and Outreach Committee, American Geophysical Union - 2011-2009

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Chair of Task Force IV, International Lithosphere Program, 2010-2014

Vice-Chair of the Focus Group: Mineral Equilibria, International Mineralogical Association (IMA)

Member of the Best Student Awards Committee, Mineralogical Society of America, 2011-2009.

Editor of Book: *Ultrahigh-Pressure Metamorphism: 25 year after discovery of coesite and diamonds in orogenic belts*. Elsevier: in press, to be issued in March 2011.

Editor of Book: *Advances in high-pressure technology for geophysical applications*, Elsevier, 2005

Invited Editor, Spec. Volumes: *Lithos*,
2009,

Journal of Earth Sciences,
2010;

*Journal of
Metamorphic Geology*,
2009, 2006;

PUBLICATIONS

More than 100 peer review papers in leading international journals, including *Nature*, *Science*, *Geology* and *Proceeding of National Academy of Sciences*.

Minutes of the February 18, 2011 Meeting

The 873rd meeting of The Mineralogical Society of Southern California was held on Friday, February 18,

2011, at Pasadena City College, Pasadena, CA. President Ann Meister brought the meeting to order at 7:30 p.m. Bruce Carter then introduced the speaker of the evening, Dr. Robert Housley, who gave a presentation titled: "The Blue Bell Mine."

Dr. Housley has a Ph. D in physics, but has had a strong lifetime interest in mineralogy and is an avid field collector. He has also been a member of MSSC since about 1985.

Dr. Housley discussed the geology, mineralogy and history of the Blue Bell claims, which consist of approximately 45 outcrops and small workings on Joe Dandy Hill, near Baker, San Bernardino County, California. These were mined sporadically for Ag-Cu-Zn from 1890 through the early 1950s. The claims are located 6 miles N of I-15, and are accessed off the Zzyzx Road offramp. These claims were also previously known as the Hard Luck claims, and portions were originally staked in 1890 for silver as the May Queen mine. Mineralization occurs as sporadic lenses and pods.

Beginning in 1949, Linarite ($\text{PbCu}(\text{SO}_4)(\text{OH})_2$), Caledonite ($\text{Cu}_2\text{Pb}_5(\text{SO}_4)_3(\text{CO}_3)(\text{OH})_6$) and Dioptase ($\text{CuSiO}_3 \cdot \text{H}_2\text{O}$) specimens were produced from these claims, and by 1985 forty five species, mostly as micro-minerals, had been identified from here.

The Blue Bell claims area is still productive. During the past fifteen years many new species have been identified, and 67 species are currently known.

In 1996, samples collected from the D site were identified by Dr. Housley as the tellurate quetzalcoatlite

$(\text{Zn}_6\text{Cu}_3(\text{TeO}_6)_2(\text{OH})_6 \cdot \text{Ag}_x\text{Pb}_y\text{Cl}_{x+2y})$.

In 2000, the rare mineral plumbotsumite ($\text{Pb}_{13}(\text{CO}_3)_6(\text{Si}_{10}\text{O}_{27}) \cdot 3\text{H}_2\text{O}$) was discovered from samples collected by Kevin Cross and supplied by Garth Bricker. These samples allowed an accurate analysis to be completed and the chemical formula was thus revised. The tellurate species dugganite ($\text{Pb}_3\text{Zn}_3(\text{AsO}_4)_2(\text{TeO}_6)$) and kuksite ($\text{Pb}_3\text{Zn}_3(\text{PO}_4)_2(\text{TeO}_6)$) were also found in the same samples.

Recently, two new species have been identified at the Blue Bell claims: plumbophyllite ($\text{Pb}_2\text{Si}_4\text{O}_{10} \cdot \text{H}_2\text{O}$) (Kampf, 2008) and Fluorphosphohedyphane ($\text{Ca}_2\text{Pb}_3(\text{PO}_4)_3\text{F}$) (in press). Six or seven probable new species are still being researched.

At the conclusion of the presentation, President Meister asked for announcements. Dr. Housley reported the Micro-mount Symposium was successful and yielded \$1044 for the Society. Jo Anna Ritchey announced the Monrovia Rockhounds will be holding their annual show on March 5 and 6, 2011 at the LA County Arboretum. Seventeen people braved the rain to attend the meeting. Door prizes were won by Pat Caplette (Uvarovite from Russia) and Marck Chorazewicz (California mineral poster).

President Meister brought the meeting to a close at 8:55 p.m.

Board of Director's Meeting

Following the regular MSSC meeting, a brief Board meeting was held beginning at 9:00pm, with all Board members and officers present, to schedule a regular Board meeting and establish an agenda. A full Board meeting was set for March 5, 2011 beginning at 1:00pm at the home of Bruce Carter. An agenda was set to include: (1) the MSSC website, (2) Bulletin issues, (3) Treasurer's report, (4) Outreach to students, and (5) Show.

The Board meeting was adjourned at 9:20pm.

Respectfully submitted, Robert Griffis, Secretary

Tucson Show. Did you go? If not, this is a link for a pretty good report on the show: <http://www.mineral-forum.com/message-board/viewtopic.php?t=1536>

Agenda Board Meeting 3/5/2011

1. Talk about the web site, including how to present the Micro Mount Conference, Friends of Mineralogy, SCMM.
2. Bulletin, including the format, economics, whether we should charge for paper copies, how e-copies is working, etc.
2. We need to list and prioritize the issues that need to be discussed and set a tentative agenda for the "real" board meeting to follow.
3. Treasurer Report by Jim Kuseley. Financial status of MSSC
4. Show. Do we want one, how big, where, etc.?
5. Out Reach program for students. When we had a show, students were very involved with the whole thing, and we had them often attending meetings.



Second Annual Gold Show, Alleghany California

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I'm the curator of a tiny museum in the tiny town of Alleghany California. We are planning on holding our second annual gold show the last weekend in June and are seeking newsletter submission guidelines from gem clubs so we can get the word out. Our website is www.undergroundgold.com We also are putting together geology tours of the Alleghany Mining District for interested groups. (These are surface tours) Geologist Raymond Wittkopp will guide the tours. If your group might like to come for a day to learn about the unique geology up here, let me know.

Thank you so much!

Rae Bell

CFMS

<http://www.cfmsinc.org/newsletter/news2011/003mar11/newsmar11.pdf>

The CFMS newsletter has a lot of information that MSSC members might find interesting, including a field trip to Topaz Mountain and Jalama Beach. Also past issues has many ideas on how to increase club membership. Most newsletters has an article on Junior Activities (or how to get and interest juniors. There is more. Take a look.



Editors Corner

This will be a new section for me, as editor, to editorialize. Others are welcome to be guest commentators.

Articles for the Bulletin are due by the 20th of each month.

I am not sure if members have noticed yet, but this club now has a very active slate of officers. Look at the Board Meeting agenda to get an idea of the first things this Board plans to address. If you, as members, have ideas, SHARE. We cannot promise to listen, but if you do not share your ideas, how can we know what you are thinking/

Note about our Treasurer: Jim Kusely has been working really, really hard on behalf of the MSSC. Thus far he has submitted at least 3 years worth of filings to the IRS so we are now still a Non-Profit Club and in good standing with the Feds. He has taken hold of the dues and membership. All checks are now being deposited promptly and membership cards and receipts are also being mailed quickly. Bank accounts are reconciled. He is now going through old papers and discs that he received. All of this takes time--and when dealing with it on a catch up basis, it takes a lot of time. We are fortunate that he has the time and is willing to do all this. With the back-log taken care for, the Treasurer's job should not be so time consuming in the future.

I printed all of Larissa Dobrzhinetskaya resume as I admit it impressed me. I have heard her give a talk before and found it quite interesting.

March 5-6 - ARCADIA, CA

Monrovia Rockhounds, Inc.
Los Angeles Co. Arboretum & Botanic Gardens
301 Baldwin Ave.
Hours: 9 - 4:30 daily
Jo Anna Ritchey (626) 359-1624
Email: joannaritchey@gmail.com
Website: www.moroks.com

March 5-6 - VENTURA, CA

Ventura Gem & Mineral Society
Seaside Park, Ventura Co. Fairgrounds
10 W. harbor Blvd.
Hours: Sat. 10-5; Sun. 10-4
Andy Anderson (805) 987-0043 / lilliananderson@juno.com
Email: vgms_editor@roadrunner.com
Website: www.vgms.org

March 11-13 - VICTORVILLE, CA

Victorville Valley Gem & Mineral Society
Tailgate at Verde Antique Quarry (Stoddard Wells)
Bell Mountain/Stoddard Well exit from I-15
Hours: 8-5 daily

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Brett Ward (760) 954-4323

Email: Bretts88@verizon.net

Website: www.vvgmc.org

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May 13-15 - ANDERSON, CA

CFMS SHOW & CONVENTION

Northern California Treasures

Hosted by: Superior California Gem & Mineral Society, Shasta Gem & Mineral Society, & Paradise Gem & Mineral Club

Shasta District Fairgrounds - Anderson, CA

Briggs Street (8 miles south of Redding)

Exit 677 off Interstate 5 to Highway 273

Hours: Fri. & Sat. 9-5; Sun. 10-4

Society Contacts for 2010

OFFICERS

President

Ann Meister

Vice President:

Bruce Carter

Secretary:

Bob Griffis

Treasurer

Jim Kusley

MSSC Bulletin
CFMS Director:
Past President
DIRECTORS
2009-2010

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Jo Anna Ritchey
Geoffrey Caplette

Leslie Ogg
Geoffrey Caplette
James Imai:
Fred Elsnau:

COMMITTEE CHAIRS

Facilities

Field Trip

Membership

Program and Education

Show

Webmaster

Bulletin Editor

Vacant

Vacant

Jim Kusley

Bruce Carter

Vacant

Leslie Ogg

Jo Anna Ritchey *joannaritchey@gmail.com*

New Location AND New Date!
WEST COAST GEM & MINERAL SHOW
MAY 20 - 22, 2011 Show Hours: Fri. & Sat., 10 - 6 ★ Sun. 10 - 5.

Holiday Inn - Orange County Airport
2726 S. Grand Ave. (Dyer Rd at 55 Fwy, Exit 8)
"Just 2 miles from our former Costa Mesa location"

80 Top Quality Dealers from around the world!!
Minerals ★ Fossils ★ Gemstones ★ Jewelry ★ Beads ★ Meteorites

FREE ADMISSION & PARKING ★ WHOLESALE ★ RETAIL
Martin Zinn Expositions, L.L.C., P.O. Box 663, Bernalillo, NM 87004
Fax: (303) 223-3478, mzexp@aol.com, www.mzexp.com

About the Mineralogical Society of Southern California

Organized in 1931, the Mineralogical Society of Southern California, Inc. is the oldest mineralogical society in the western United States. The MSSC is a member of the California Federation of Mineralogical Societies, and is dedicated to the dissemination of general knowledge of the mineralogical and related earth sciences through the study and collecting of mineral specimens. The MSSC is a scientific non-profit organization that actively supports the geology department at Pasadena City College, Pasadena, California. Support is also given to the Los Angeles and San Bernardino County Museums of Natural History. The Bulletin of the Mineralogical Society of Southern California is the official publication of the Mineralogical Society of Southern California, Inc.

The MSSC meetings are usually held the second Friday of each month, January, February and August excepted, at 7:30 p.m. in Building E, Room 220, Pasadena City College, 1570 E Colorado Boulevard, Pasadena, California. The annual Installation Banquet is held in January, and the annual Picnic and Swap Meeting is held in August. Due to PCC holidays meetings may vary. Check the Society web page for details. The Society also sponsors the annual Pacific Micro mount Symposium held at the San Bernardino County Natural History Museum during the last weekend of January.

Annual Membership dues for the MSSC are \$20.00 for an individual membership, \$30.00 for a family membership.

The Society's contact information::

Mineralogical Society of Southern California
1855 Idlewood Rd.,
Glendale, CA 91202-1053
E-mail: bgbrdpen@earthlink.net
Web: <http://www.mineralsocal.org>

The Mineralogical Society of California, Inc.

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Northern California Treasures

May 13, 14, and 15, 2011

**California Federation of Mineralogical Societies, Inc.
Show and Convention**

Shasta District Fairgrounds
Briggs St. - Anderson, CA
8 Miles South of Redding, CA



Hours:
Friday: 9am-5pm
Saturday: 9am-5pm
Sunday: 10am-4pm

Raffle
Speakers
World Class Displays
Silent Auction
Free Demonstrations



Minerals
Fossils
Beads
Gems
Jewelry
Jewelry Supplies

Lots of stuff!
Loads of Fun!

Come for Lunch and
stay through closing!

Adults: \$4.00
Seniors: 65+ \$3.00
Children: 13-18 - \$2.00
Children: 12 and Under - Free



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