

November 2006
January 2007

NCCCHPS

The Newsletter of the Northern California Chapter of the Health Physics Society



Mark Your Calendars!

The 2006-
2007 NCCCHPS
technical
meeting dates
are listed
below!

November 9,
2006
Scott's Seafood in
Oakland

January 18,
2007
TBD

March 1,
2007
TBD

April 12,
2007
TBD

May 17,
2007
H/S Lordship's in
Berkeley

Thursday, November 9, 2006 Scott's Seafood, Oakland

6 pm-Social Hour
7 pm-Dinner
8 pm-Presentation



Speaker: Dr. Andrew Calvert
Research Geologist, Volcano Hazards Team,
U.S. Geological Survey, Menlo Park, CA

Title: "Isotopic Dating of Active Volcanic Centers"

Abstract

The United States contains well over 70 volcanoes capable of erupting; two are currently erupting and four others are being watched closely. Recent eruptions in the US have seriously damaged passenger and military aircraft, destroyed property, killed people and fundamentally altered the landscape. Volcanoes are actively monitored with seismic and geodetic instruments, gas emission studies and satellite imagery; however, it is geologic mapping, geochronology, and the development of volcanic histories that informs scientists of likely eruptive scenarios. Understanding how eruptive volume, chemical composition, and eruptive style vary with time requires precise, reliable ages of past eruptive products.

Several isotopic systems are used to date volcanic events including K-Ar, ^{14}C and U-Th disequilibrium techniques. K-Ar and related $^{40}\text{Ar}/^{39}\text{Ar}$ techniques (analysis of rocks irradiated in the core of a fast neutron reactor) are our most reliable tools, but are difficult to apply on rocks younger than 200,000 years. Argon analysis with increasingly sophisticated mass spectrometry allows precise measurement of isotopic ratios and high-precision dating. We have successfully dated the AD 79 eruption of Vesuvius and now routinely date rocks in the 20,000 to 50,000 year range.

Volcanic histories from volcanoes in Alaska (Mt. Veniaminof), Hawaii (Kilauea and Kohala) and Oregon (Three Sisters) will be presented to illustrate these isotopic techniques.

About the speaker

Andy Calvert is Project Chief of Core Geochronology and a Research Geologist with the Volcano Hazards Team at the USGS in Menlo Park.

Dr. Calvert received BS and MS degrees in Geology from Stanford University studying the mid-crustal (20-40 km depth) metamorphism and deformation of gneiss domes in westernmost Alaska. His PhD work at UC-Santa Barbara continued this research across the Bering Strait into eastern Chukotka, correlating the geology with a deep crustal seismic experiment of the Bering Shelf. During his postdoctoral work at UCSB, he began working on young volcanic systems, striving to apply K-Ar dating to very young rocks.

In 2001 Dr. Calvert joined the US Geological Survey as Geochronologist for the Volcano Hazards Team. His main research is developing geologic histories for active volcanic systems in the Western US, Alaska and Hawaii.

NCCCHPS



2006-2007
NCCCHPS
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Thursday, January 18, 2007 Meeting
Location to be Announced

Title: Dosimetry for in vivo studies on the effect of
low doses of ionizing radiation on humans

Speaker: Joerg Lehmann, Ph.D., DABR
Assistant Adjunct Professor,
University of California Davis,
Department of Radiation Oncology



Abstract: The significance of the biological activity of low-dose ionizing radiation in the range of 1–10 cGy is a subject of contention. While there is ample evidence from in vitro cell culture models that doses as low as 1 cGy result in changes in the transcriptome the cells used in such studies lack the complexity of three-dimensional tissue. In addition, cell lines are immortalized or transformed and live on artificial substrates. Thus, to develop rational, scientifically sound public policy on safe low-dose exposures, it is necessary to obtain data directly in humans. While it is not possible to irradiate volunteers prospectively for the purpose of such studies, humans are irradiated daily for the treatment of cancer. These patients can be a study population if the physics and dosimetry of their treatment plans can be made sufficiently robust to prospectively identify sites of low-dose exposure from which tissue samples can be obtained

Since the doses of interest in support of public policy are well below those used in therapy (1–10 cGy and 2 Gy, respectively) and the treatment plans are essentially fixed by therapeutic strategy (multiple-beam, conformal treatment portals), the dosimetry is complex. Low-exposure points are outside of the treatment portal, an area that is insufficiently modeled in standard treatment planning systems. We therefore used a Monte Carlo treatment planning system for this study. We have designed, validated and implemented a research protocol to identify the location of biopsy points on the volunteer patient's skin surface with a dosimetric uncertainty of 15% or better, which is well within the acceptable uncertainty for support of clinical/biological studies. The PEREGRINE Monte Carlo simulation system was used to model radiation dose delivery, and TLDs were used for validation on phantoms and for confirmation during patient treatment. Using a single, thickness-independent correction factor for the clinical calculations, the average of 36 measurements for the predicted 1-cGy point was 0.985 cGy (standard deviation: 0.110 cGy) despite patient breathing motion and other real-world challenges.* Since the 10-cGy point is situated in the region of high dose gradient at the edge of the field, patient motion had a greater effect. An in-vivo measurement technique using linear arrays of MOSFET detectors has been developed and successfully employed for these data points.

*Joerg Lehmann, Robin Stern, Thomas Daly, David Rocke, Chad W Schwietert, Gregory E Jones, Michelle L Arnold, Christine Hartmann Siantar, and Zelanna Goldberg, "Dosimetry for quantitative analysis of low dose ionizing radiation effects on humans in radiation therapy patients," Rad Res 165 (2) 240–247 (2006)

About the Speaker: Dr. Joerg Lehmann obtained his formal education in Germany. His thesis work was on the design of ionization chambers for clinical electron dosimetry. Beginning 1999 he worked as a visiting researcher, postdoctoral fellow and staff physicist at the Stanford University Department of Radiation Oncology, where he engaged in various research and clinical projects, including Intravascular Brachytherapy (IVBT) and Intensity Modulated Radiation Therapy (IMRT). In 2002 Dr. Lehmann joined LLNL as a physicist and worked on projects using dosimetric measurement methods and Monte Carlo simulations. As part of the LLNL UC Davis Cancer Center he became adjunct faculty at UC Davis in 2003. He left LLNL in 2005 and works now as research physicist in the UC Davis Department of Radiation Oncology. His research is focused on Image Guided Radiotherapy (IGRT), Monte Carlo based design of beam models for radiation treatment planning systems and studies in combined nanoparticle thermotherapy and radiation therapy. Dr. Lehmann is author or co-author of 20 peer reviewed publications, one book chapter and over 70 presentations at scientific meetings.

NCCHPS



NCCHPS Presidents Column

We have started our 2006-2007 dinner meeting season with an interesting topic and an exciting speaker and a meeting attended by over 60 participants at Francesco's thanks to the organizational skills of John Pasinosky. This year we plan to rotate the meeting locations and restaurants around the Bay Area in order to taste different food, test various chefs's credentials and give the opportunity to other NCCHPS members to reduce their commute. We will try to organize some of our dinner meetings at fancier restaurants (e.g. at Scott's in Oakland for the November meeting) while keeping the cost to our members unchanged.

Many thanks go to Jack Elliott for his continued efforts to keep us informed via the e-mailing list and for his pictures of the dinner meetings which we enjoy looking at our web site.

Our Chapter together with the HPS Accelerator Section will host the 2008 Midyear HPS topical meeting and the Professional Development School (former Summer School) at the Oakland Marriott and Convention Center. The topic for both the meeting and the school is Radiation Producing Machines. The dates for the Midyear meeting are January 28-30, 2008 and for the Professional Development School (PDS) are January 31 – February 2 2008. The Chair of the Local Arrangement Committee (LAC) for the 2008 Midyear Kathleen Dinnel-jones (dinneljones1@llnl.gov) and the Co-Chairs Dawn Banghart (banghart2@llnl.gov) and John Ahlquist (john.ahlquist@sbcglobal.net) are looking for energetic volunteers to help organize the tours and the social program. The Administrative Dean of the Professional Development School is Linnea Wahl from LBNL (LEWahl@lbl.gov) and PDS's Academic Deans are Vaclav Vylet (vylet001@mc.duke.edu) and Don Cossairt (cossairt@fnal.gov). I am confident that our NCCHPS will make the 2008 midyear meeting and professional development school a memorable event. I will encourage all our members to contribute to the organization and popularization of this event and to participate either as presenters or as participants.

One of this year's chapter goals is to increase the number of our Affiliate members. Our Affiliate members represent NCCHPS sponsors from the manufacturers of radiation protection instrumentation and providers of radiation safety services. Please direct any prospective Affiliate members to our Affiliate member liaisons Jesse Hendricks (Jesse.hendricks@gmail.com) and Jack Topper (Jack.Topper@radetco.com). The Affiliate Member Prospectus will soon be posted on the NCCHPS web site.

Our chapter is looking for a volunteer who has some familiarity with web page design and who can assist the HPS web master in keeping our web site current and make it more attractive. If interested, please contact me at (radev1@llnl.gov).

Finally, as always your financial support to the Moyer Fellowship is deeply appreciated. Our special thanks to Charlie Schmidt, Bill Vermeere and Julia Ryan for their continued efforts in this area.

Radoslav Radev
President, NCCHPS

NCCYHPS



MOYER FELLOWSHIP UPDATE

by Charles Schmidt

The first Moyer fellowship award was given in 1985. Every year since then, the most academically promising applicant for a Health Physics Society fellowship has received the Moyer fellowship to partially support their graduate studies. This year's awardee was Scottie W. Walker. He has enrolled at the University of Florida where he will begin his studies in Health Physics. Scottie has a good head start for a health physics career. He has served in the "Nuclear Navy" and was employed at Sandia National Laboratories in Albuquerque where he was the technical lead for the Global Search and Secure program. We wish Scottie well on his progress towards a Ph. D. degree, and a productive career in health physics.

At our chapter's first meeting in the 2006 - 2007 chapter year, contributions from our members got our fund raising campaign off to a good start. A total of \$475 was received. This was an excellent beginning, but that pace should be continued throughout the year. We thank Mike Singh, Charles Schmidt, Mike Grissom and Patricia Durbin-Heavey for their generous contributions at the September meeting.

INTERESTED IN HELPING WITH THE 2008 MIDYEAR HPS MEETING HERE IN OAKLAND!?

If so, please contact John Ahlquist (john.ahlquist@sbcglobal.net), Kathleen Dinnel-Jones (dinnel-jones1@lnl.gov), Dawn Banghart (banghart2@lnl.gov), or Linnea Wahl (LEWahl@lbl.gov). We are in the process of forming committees and looking for committee members. More information will be in the next newsletter.

2007 Midyear Topical Meeting

"Decontamination, Decommissioning, and Environmental Cleanup"

January 21 - 24, 2007, Knoxville, TN

The East Tennessee Chapter of Health Physics Society is pleased to hold the 2007 Midyear Meeting!

Please come join us. For more information, check out our website:

<http://www.hpschapters.org/etchps/2007MY.html>

NCCHPS



Would you like to take an active role in NCCHPS?

We're currently looking for volunteers to take on exciting tasks providing backup support for the Newsletter Editor, Website Administrator, and other functional positions within NCCHPS! If you're interested please contact our Members-At-Large Todd Sundsmo (sundsmo2@lnl.gov) and Jack Topper (jack.topper@radetco.com).

Job Announcement

EH&S Specialist - Radiation Safety

Job Summary

- Perform duties as assigned and help develop the following areas:
- Radiation safety survey program: ensure that all GNEs labs have been regularly surveyed for contamination (weekly, monthly and quarterly) including equipment rooms, storage rooms using survey meter and wipe test with Liquid Scintillation Counter. Follow up contaminated areas appropriately.
- Thyroid bioassay program: inform iodine users for bioassay, perform QA/QC on bioassay unit, determine efficiency, send out the unit annually for calibration.
- Equipment and recycling/decontamination program: survey unused and or recycling equipment for decontamination and dispose appropriately
- Isotope shipments according to DOT requirements: Prepare extramural shipments in accordance with DOT and DHS regulations
- Radiation safety support for lab moves: Assist, post and edit accordingly whenever a lab move occurs.
- Sealed source leak tests: collect leak test samples semi annually and document appropriately
- External dosimetry program: issue and distribute new dosimeters, update Landauers records database, manage personnel dosimeters
- Radiation instrument calibrations: collect and calibrate all portable survey instruments
- Radiation laboratory audits: conduct quarterly lab audits, follow up and correct audit findings
- Radiological emergency response: respond and evaluate radiological spills/emergencies
- Radioactive material inventory/ EHSA database: maintain an accurate radioactive material inventory using EHSA on-line application
- Process Radioactive packages on a timely fashion
- Transport radioactive samples within GNE buildings
- Serve as First Alert Team EHS Advisor
- In-depth investigation on the cause and effect of any incident involving sources of ionizing radiation and determination of the corrective action to be taken.
- The successful candidate must have the ability to work independently, is accountable and possess self motivation. Specific responsibilities will include administrative oversight of individual programs as delegated by the Radiation Safety Officer and development and implementation of radiation safety programs as needed or required by regulatory agencies.

Qualifications/Job Requirements

- Prefer Bachelors degree in health physics or any scientific field or related field
 - 2-4 years of experience working in an established research radiation safety program
 - Strong written and oral communication and interpersonal skills
 - Strong team orientation
 - Prefer experience with PET facility
- Apply to: RECRUITER: Derrick Webster
<mailto:Webster.derrick@gene.com>Webster.derrick@gene.com
650-467-1428
HIRING MANAGER: Rao Goriparthi

Reports to: Radiation Safety Officer
Job ID 1000015352
Requisition Number 06-1000015352
Location South San Francisco, CA
Job Category Env Health & Safety
Department R and D EHS
Department number 901
Job class E
Salary E2
DIVISION: Environmental, Health & Safety
REQUISITION NUMBER: 06-1000015352

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The next deadline for input to the newsletter editor is:

Friday, January 19,
2007

Direct your input to:

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tenbrook1@llnl.gov
925-423-1470

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c/o Warren TenBrook
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94550

<http://hpschapters.org/ncchps/>

-Mailing Label-

We encourage you to register for dinner ONLINE at
<http://hpschapters.org/ncchps/meetings.php3>

The Next Meeting!!

Our November 09 meeting will be at Scott's Restaurant in Jack London Square in Oakland. The address is:

2 Broadway, Oakland,
California 94607
(510) 444-3456

Speaker:

Dr. Andrew Calvert
Research Geologist, Volcano Hazards Team, U.S. Geological Survey, Menlo Park, CA

Title:

"Isotopic Dating of Active Volcanic Centers"

The Menu Choices:

BAKED SALMON FLORENTINE
BEEF BROCHETTE
ROASTED VEGETABLE RAVIOLI

Schedule:

6 pm-Social Hour
7 pm-Dinner
8 pm-Speaker

Registration Deadline:

The deadline for making online reservation for the November meeting is October 24!

\$25 Pre-registered
\$30 At The Door
\$10 Student

Please register online!
Contact Quang Le
ONLY if you encounter
problems with online registration:
le22@llnl.gov