

Newsletter

Vol.2 No.3 September 2003, Stony Brook

COMPRES goes into its second year

Robert C. Liebermann is announced as the COMPRES President

The Executive Committee has made a final decision on the president search, and announced that Robert C. Liebermann has been selected as the new president of COMPRES. The presidential search started last year. The Search Committee made great efforts in recruiting excellent candidates from the community. In April this year, the Search Committee identified two strong candidates and submitted their names to the Executive Committee. After careful reviews of backgrounds and experiences and extensive interviews, the Executive Committee announced the final decision in August.

Bob is a faculty member, a Distinguished Service Professor, at State University of New York at Stony Brook. He is an outstanding scientist achieving great academic contributions to the Earth science

community. He played an important role, as Associate Director, in making CHiPR successful. He also demonstrated his exceptional leadership in his administrative experience as a Chair of the Department of Geoscience and Dean of the College of Arts & Sciences at Stony Brook University. We expect his excellent contributions and leadership in leading the consortium to serve our high pressure community.

Congratulations to Bob. Our thanks to Jay Bass for serving as the first president of COMPRES. Special thanks to the Search Committee members: Raymond Jeanloz, Charles T. Prewitt, Nancy Ross, David Walker (Chair), Donald J. Weidner.

Don Weidner
Chair of Executive Committee

IN THIS ISSUE:

New President of COMPRES	1
President's Message	2
A Letter from Jay Bass	3
From the Second Annual Meeting	4
News —Synchrotron and Neutron.....	5
COMPRES Infrastructure Developments.....	6
Upcoming Events	6
COMPRES Listserv Evolving	7
New Beamline Internship Program	7
Opportunities	8



Photo to the right: Bob Liebermann, the new president of COMPRES.



President's Message

1 September 2003

On September 1, 2003, I took up my new duties as President of the Consortium for Materials Properties Research in Earth Sciences [COMPRES]. I spent the 2002-03 academic year on sabbatical leave in Toulouse, France. Prior to that, I had been serving as Dean of the College of Arts & Sciences at Stony Brook University for 18 months. Consequently, I have not been directly involved in the evolution of COMPRES for more than two years.

In the first 16 months of its existence, COMPRES has made major strides in achieving its objectives. I look forward to working with the Executive Committee and all of you to build on this initial progress and to continue to develop our shared vision and nurture existing programs and new initiatives over the next few years.

Later this month, I will be visiting the NSF Division of Earth Sciences to discuss with the program directors the current status and our future plans for COMPRES. I will also be paying a similar visit to the DOE Basic Energy Science Division in November. I will be joined on these visits by Don Weidner, Chair of the Executive Committee of COMPRES. We will report on the outcome of these visits in later issues of the Newsletter and messages to the COMPRES community.

As part of my first few months on the job, I also hope to visit all of the institutions which are responsible for overseeing or operating community facilities for COMPRES [Geophysical Laboratory and Stony Brook University for the National Synchrotron Light Source (NSLS), UC Berkeley for West Coast Synchrotrons and Virginia Tech for neutron studies, as well as GeoSoilEnviroCARS at the Advanced Photon Source (APS)], or where Infrastructure Development projects have been funded [Princeton/APS for Laser Heating in the Diamond-anvil Cell, Arizona State for Multi-Anvil Cell Development, Geophysical Laboratory for Pressure

Calibration at High Temperature, University of Colorado for Absolute P&T Calibration, and the University of Illinois for Brillouin Spectroscopy at the APS]. Where feasible, I hope to be joined on these visits by one or more of the members of the Facilities or Infrastructure Development Standing Committees.

The Executive Committee is currently beginning to develop plans for the COMPRES Annual Meeting/Workshop in 2004. Suggestions for suitable times and locations are welcome, as well as comments on the previous meetings at Stony Brook [Sept 2002] and Santa Cruz [June 2003].

I would like to take this opportunity to thank Jay Bass for the exemplary leadership and fine service that he has rendered to COMPRES as its first President in 2002-03.

Please feel free to contact me directly if you have new ideas for COMPRES or other matters that you wish to discuss.

Best regards,
Bob Liebermann

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A LETTER FROM JAY BASS, FORMER PRESIDENT OF COMPRES [2002-2003]

Dear Colleagues,

As of September 1, Bob Liebermann has stepped into his new position as the President of COMPRES. I think I speak for all of our members in wishing Bob a successful term. As an excellent scientist with an outstanding track record, and as a seasoned administrator who has served as a department chair and the Dean of a college, I am certain that Bob will do an outstanding job as President over the next four years. We are indeed fortunate to have a person with his skills and experience leading our consortium.

Over past year COMPRES has already had a substantial impact on our field. Perhaps most important to our community is the availability of centralized facilities for high-pressure research. COMPRES now provides support for high-pressure synchrotron research at the National Synchrotron Light Source of the Brookhaven National Laboratory, and on the West Coast at the Advanced Light Source of the Lawrence Berkeley National Laboratory. Through this support, the COMPRES community has access to far more beam-time than would be available via the general users program. More important, the facilities themselves will be able to offer higher quality infrastructure and better services to their users.

A development I've been particularly happy to see is the COMPRES community becoming part of the process of developing these facilities through a number of workshops held during the year. Such input, not only on synchrotron facilities but also on the way in which infrastructure development and facilities projects evolve, will be an ongoing part of the COMPRES culture. A number of workshops have been held to assist new users and to help students become familiar with techniques they might not have used in the past. A notable example is the COMPRES effort in neutron diffraction, for which a workshop was held in March 2003 at the Oak Ridge National Laboratory. We have also been able to get a beam-line internship program funded to give in-depth training to the future generation of

high-pressure scientists, and at the same time provide much needed support for beam-lines. We are working with the International Union of Crystallography and the DOE (through the Advanced Photon Source of the Argonne National Laboratory) to co-sponsor workshops and short courses on the theme of high-pressure techniques. These are only a few of the accomplishments and activities of COMPRES in its first year, and it has been a privilege for me to be part of this progress.

Rather than try to list everything we have gotten done in our first year, it will suffice to say that although COMPRES is still in its infancy we have many tangible results to show for our efforts. Whatever we have accomplished is due to the dedication and work of many people, and I would like to mention some of them here. First off, I would like to thank Herman Zimmerman, David Lambert, Sonia Esperanca, Robin Reichlin, and Russell Kelz of the NSF Division of Earth Sciences. Without their moral and financial support COMPRES would not have become a reality. Don Weidner has nurtured COMPRES from the beginning and has done everything imaginable to make it work. Many people gave their time generously for committee work. These include Executive Committee members Don Weidner, Shun Karato, Rus Hemley, Tom Duffy, Quentin Williams, and Jim Tyburczy (all of whom felt as if we were always meeting for one reason or another); the Infrastructure Development Committee (Jim Tyburczy, Ray Jeanloz, Dave Walker, Yanbin Wang, Pam Burnley); the Facilities Committee (Quentin Williams, Harry Green, Mark Rivers, Mike Brown, and Yingwei Fei); the search committee for a permanent President (Dave Walker, Ray Jeanloz, Nancy Ross, Charlie Prewitt); and the External Advisory Committee (Bruce Buffett, Chi-Chang Kao, Rick O'Connell, Guy Masters, Paul Silver). I thank all of you for your time and advice. Guy Masters, Quentin Williams, Elise Knittle, and Surendra Saxena were kind enough to host COMPRES meetings. Those who generously donated their time to run COMPRES workshops, special

(continued on page 4)

A LETTER FROM JAY BASS

(cont'd)

sessions, or other meetings include Nancy Ross, Simon Clark, Kurt Leinenweber, Dion Heinz, Guoyin Shen, Glen Richards, Owen Evans, Claire Ondrovic, and Ivan Getting. Thanks are due to Dave Mao, Murli Manghnani, and Bob Schock for their support and advice. Ann Lattimore deserves not just thanks, but a standing ovation for handling innumerable details and mounds of paperwork at the COMPRES office. My thanks to all of you, and to every person who took the time to attend a COMPRES meeting.

Although we did not know it at the time, the relatively simple plan that we outlined in the

original COMPRES proposal was just a starting point for what COMPRES can and should become. Much remains to be done in the years ahead for COMPRES to reach its full potential and final form. I am confident that it has the leadership and enthusiastic community support to make it an enormous asset for the entire high-pressure research community. I've appreciated the opportunity to work with all of you who helped to make the first year of COMPRES a productive and fruitful one.

Sincerely,
Jay Bass



From the Second Annual Meeting

The second COMPRES Annual Meeting was held at Santa Cruz on June 18-20, 2003. Meeting agenda, submitted abstracts and minutes of the meeting are available on the COMPRES web page: <http://www.compres.stonybrook.edu/Meetings/2003-06-18>.

At the meeting, the following members of the COMPRES Committees were elected:

Executive Committee:

Donald Weidner (Chair, Stony Brook University)
Shun Karato (Vice Chair, Yale University)
Jay Bass (University of Illinois at Urbana-Champaign)
Russell Hemley (Geophysical Laboratory)
Robert Liebermann (Stony Brook University)
Chairs of Standing Committees [non-voting]:
Facilities Committee [currently vacant; former chair Quentin Williams]
Infrastructure Committee [James Tyburczy]

Facilities Committee:

Thomas Duffy (Princeton University)
Yingwei Fei (Geophysical Laboratory)
Harry Green (Univ. of California at Riverside)
Charles Prewitt (University of Arizona)
Mark Rivers (University of Chicago).

Infrastructure Development Committee:

James Tyburczy (Chair, Arizona State University)
Pamela Burnley (Georgia State University)
Kevin Righter (NASA)
Nancy Ross (Virginia Polytechnic Institute and State University)
Yanbin Wang (University of Chicago)

Our deep appreciations to the rotated-off committee members for their voluntary services for the community. They are Thomas Duffy (Executive Committee), Quentin Williams and Michael Brown (Facilities Committee), David Walker and Raymond Jeanloz (Infrastructure Development Committee).

News from Synchrotron and Neutron Projects

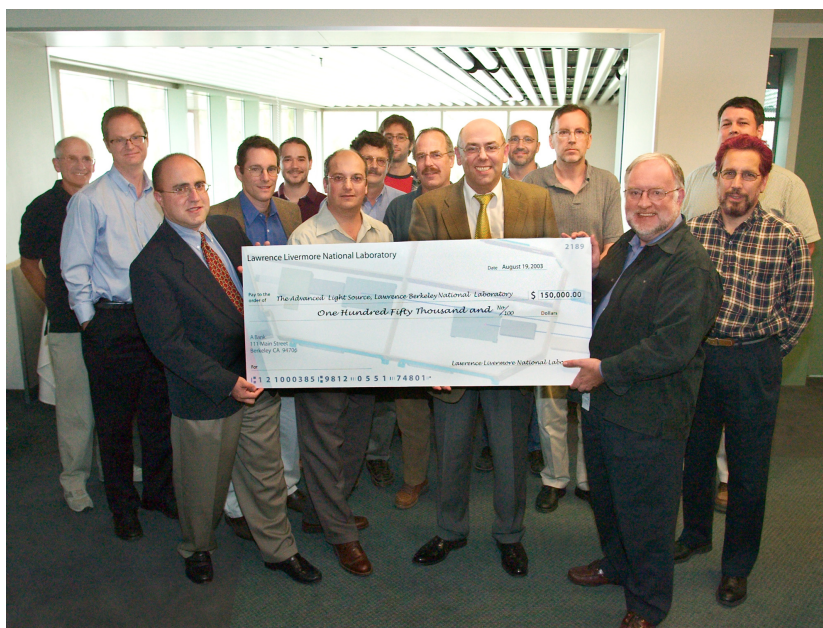
COMPRES high pressure program at the ALS is growing: LLNL joins Calypso program

With the payment of the first installment of a \$500K contribution, Lawrence Livermore National Laboratory (LLNL) recently became the seventh member of a consortium of high-pressure users of the California High-Pressure Science Observatory (Calipso), which is currently centered on a number of beamlines at the Advanced Light Source, Berkeley, California. The Calipso program is currently focused on developing a new beamline at the ALS (Beamline 12.2.2) designed for studying materials held in diamond-anvil cells and heated with lasers. The beamline will make use of the hard x-rays from a superbend magnet to enable x-ray diffraction and x-ray spectroscopic measurements. Other facilities available at the moment include beam lines for diffraction using a DAC and image plate detectors and an infrared beamline. The current partners in Calipso are COMPRES, Berkeley Laboratory; the Univ. of California (UC) Berkeley Departments of Chemistry and Earth and Planetary Sciences; the UC Santa Cruz Department of Earth Sciences; the UC Los Angeles Department of Chemistry and LLNL.

SNAP project is funded by DOE

Congratulations to John Parise, Rus Hemley, Dave Mao and Chris Tulk who were recently informed that their proposal, SNAP (Spallation Neutrons And Pressure), has been approved for funding by the DOE. The SNAP project includes construction of a high-pressure beamline at the Spallation Neutron Source (SNS) in Oak Ridge, TN (<http://www.sns.gov>). The PI's are in the process of putting the final touches to designs of the beamline and a time line for high-pressure cell development. DOE has put the project on a fast track which means that it will be one of the first beamlines accepting beam when the SNS comes up in 2006!!

Funds are available to support Earth Scientists who have been awarded time at neutron facilities to carry out experiments as well as for the organization / participation of Earth scientists at workshops and conferences on neutron scattering. Please contact Nancy Ross for details: nross@vt.edu.



On August 19th, LLNL representatives Joe Zaugg, Louis Terminello, and Patrick Allen presented a symbolic check for the first installment of \$150K to ALS representatives Neville Smith, Ben Feinberg, and Howard Padmore, while Calipso program manager Simon Clark looked on.

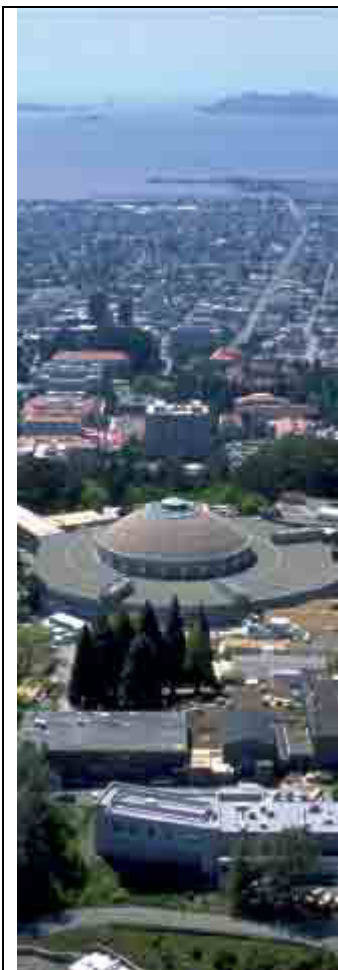
COMPRES Infrastructure Developments

The COMPRES infrastructure development program is gearing up. We anticipate establishing new infrastructure development projects on an annual basis. A proposal call for new projects has been issued. Please see *Opportunities* section of this newsletter for program details. More information can be obtained from either Jim Tyburczy (Jim.Tyburczy@asu.edu), the Committee Chair for Infrastructure Development or Bob Liebermann (Robert.Liebermann@stonybrook.edu), the President of COMPRES



Upcoming Events:

- **SENSE Workshop: Sample Environments for Neutron Scattering Experiments**, September 24–26, 2003 Florida State University, Tallahassee, Florida. See <http://www.sns.gov/jins/jins.htm> for details.
- **Geological Society of America Meeting**, November 2-5, Seattle, WA. There will be an informal gathering for those interested in the new high-pressure beamline at the SNS and how COMPRES might support this initiative. Please contact Nancy Ross (nross@vt.edu) if you are interested in participating.
- **Gordon Conference: Research at High Pressure**, Jun 27-Jul 2, 2004 Kimball Union Academy in Meriden, New Hampshire. Please contact Anastasia (Ann) Chopelas (chope-las@phys.washington.edu) for details.



IUCr/COMPRES High-Pressure Workshop on High Pressure Structure and Reactivity: The Science of Change

December 4-7, 2003

Lawrence Berkeley National Laboratory, Berkeley,
California.

The International Union of Crystallography (IUCr) and the Consortium for Materials Properties Research in Earth Sciences (COMPRES) will hold a workshop on the application of crystallographic techniques to the study of chemical reactions and phase transitions induced by the application of high-pressure. The aim of the Workshop is to review the current state of this field, and to attempt to predict the course of research in the future. The Workshop will be arranged into a number of symposia with invited talks, talks selected from abstracts and poster sessions. There will also be a Practicum designed for high level instruction in high-pressure techniques, and open to all attendees at the Workshop. There will be a commercial exhibition. The Workshop will be held on December 4-7, 2003, immediately preceding the American Geographical Union Meeting in San Francisco. A large number of bursaries to provide support for students to attend the meeting and practicum will be available.

For further details visit our web site at:
<http://www-esg.lbl.gov/esg/meetings/IUCrCHP0903/index.html>

COMPRES Listserv Evolving

The COMPRES listserv facility has recently been modified and expanded. We now have two lists: the original one, called COMPRES-L, includes people who have self-subscribed, those who have attended any COMPRES meeting, or are COMPRES committee members, electors or alternates from the COMPRES member institutions. It currently contains about 300 people.

A larger one, including about 700 people, is called COMPRESALL-L. It includes all of the above, plus names we have identified as potentially interested in COMPRES activities, based on their inclusion of other mailing lists, such as AIRAPT. The list includes all those on the COMPRES people database, accessed at <http://www.compres.stonybrook.edu/People/index.html>. Soon, you will be able to add yourself to either list over the web at the above web site.

Both of these listservs are moderated, so that anyone who wishes to send a message should email it to COMPRES@notes.cc.sunysb.edu. It will be reviewed and sent out, if appropriate. These messages should NOT include any attachments. All text should be in the body of the message.

We hope that these two lists will enable enhanced communication within the COMPRES community.



New Beamline Internship Program Open for Applications

A new COMPRES beamline internship program has been approved by NSF. The dedicated funding is added to the second year COMPRES budget for supporting two internships each year at national facilities. The internship program is designed with the following goals:

- Provide needed beamline support for users at the national facilities.
- Provide in-depth training to individuals with PhD level career goals in high-pressure research in the use of national facilities.
- Provide expertise at many Universities of national facilities upon return of the intern to the graduate program.

A search committee has formed for the intern recruitment.

Search Committee Member:

John Parise (John.Parise@sunysb.edu)
Mark Rivers (rivers@cars3.uchicago.edu)
Simon Clark (smclark@lbl.gov)
Donald Weidner (Donald.Weidner@sunysb.edu)

Please see *Opportunities* section of this newsletter for program details.

Opportunities

Call for Proposals COMPRES Infrastructure Development Projects Due: 1 November 2003

COMPRES Infrastructure Development projects are intended to develop new techniques, infrastructure and/or experimental capability for community-based high pressure Earth and planetary science research. The health and strength of COMPRES depends on a steady flux of new ideas, concepts and technologies. COMPRES anticipates possibly having funding to initiate a few new Infrastructure Development projects during Year #3 [5/04-4/05]. A key element of each new project will be to develop strong, active and early community outreach and collaboration for each project.

Infrastructure Development Projects should include one or several of the following attributes: development of frontier-level tools that require high degrees of innovation; enabling new capabilities to be readily accessible to the community; fostering connections and sharing of expertise within the COMPRES community; fostering connections and sharing of expertise with other scientific communities.

Proposals for new Infrastructure Development projects are due on 1 November 2003, to be submitted electronically to Committee Chair Jim Tyburczy (jim.tyburczy@asu.edu) and also to COMPRES Central (alattimore@NOTES.CC.SUNYSB.EDU), to be evaluated by the COMPRES Infrastructure Development Committee. This committee's recommendations will be forwarded to the Executive Committee, which will make the final decisions and will prepare the master COMPRES budget proposal for Year #3.

New proposals shall consist of 1) 3-5 pages of text (including figures, tables and references), 2) NSF-style 2-page curricula vitae of project directors, and 3) NSF budget forms.

Every Infrastructure Development project shall, generally within the first year of its initiation, obtain community input and educate the community on the directions, goals and capabilities of the project. One means of accomplishing this may be through one or more workshops. We also encourage the use of any effective means of involving the community in the project, including electronic communications, targeted collaborations or other innovative approaches. Funding for this activity, including workshops, shall come from within the project's budget, and may be supplemented by other (non-COMPRES) sources of support. The specific form, venue and timing of any workshop shall be determined by the project's directors, who may benefit from consultation with members of the Infrastructure Development Committee. The intent is to develop strong, active and early community interaction and collaboration for each project.

At the COMPRES Annual Meeting, each current Infrastructure Development project PI has the responsibility to make a presentation on current progress and results. A written annual project progress report will be submitted each year by a date determined by the Committee (currently set at November 1).

For further information contact Jim Tyburczy (Infrastructure Development Committee Chair) or COMPRES President Robert Liebermann. The other current members of the committee are: Pamela Burnley, Yanbin Wang, Nancy Ross, and Kevin Righter.

Appendix:

The five current COMPRES Infrastructure Development projects are:

- Multianvil cell development (Kurt Leinenweber and James Tyburczy, Arizona State University)
- Development of the laser heated diamond cell (Thomas Duffy, Princeton; G. Shen, D. L. Heinz, The University of Chicago)
- Pressure calibration at high temperatures (Yingwei Fei, Geophysical Lab)
- Absolute pressure and temperature calibration (Ivan Getting, University of Colorado)
- Brillouin spectroscopy lab at Advanced Photon Source: A community resource (Jay Bass, University of Illinois and G. Shen, University of Chicago)

Opportunities

Los Alamos POSTDOC Job# 205845.

Postdoctoral Position in High Pressure Synthesis and Characterization

Los Alamos POSTDOC Job# 205846

Postdoctoral Position in High Pressure Physics and Crystallography

Los Alamos POSTDOC Job# 205847

Postdoctoral Position in High Pressure Mineralogy and Geochemistry

The Los Alamos Neutron Scattering Center (LAN-SCE-12) is seeking postdoctoral candidates to work on an on-going project of material synthesis under high pressures and high temperatures; equation of state and thermodynamics of metals, alloys, ceramics, and minerals under high pressures and high temperatures; Earth materials under high pressure and high temperature conditions. The candidates are expected to publish the results of his/her basic research in the open literature and present it at relevant conferences. Desired Skills: Previous experience with high-pressure technologies, materials synthesis, and neutron/x-ray diffraction.

Education: A Ph.D. in Physics, Chemistry, Materials Science, Earth Science, or a related field completed within the last five years or soon to be completed is required.

For further technical inquiries, contact Dr. Yusheng Zhao at: yzhao@lanl.gov.

COMPRES Beamline Intern

The Consortium for Materials Properties Research in the Earth Sciences seeks applicants for beamline intern positions. We expect to make at least two appointments beginning as early as September, 2003 for a period of one year. These positions are offered as educational opportunities for Earth Science students between the bachelors degree and the PhD. Successful applicants should be interested in High-Pressure Earth Science research careers and have a bachelor's degree. Some graduate training in high-pressure research science is preferred.

They will be trained in the operations of COMPRES-related beamlines at one of the National Facilities (x-ray or neutron sources) and will be expected to assist users in conducting experiments at these facilities. They will have the opportunity to pursue some independent research as well. Duties will include learning the operation of the existing technology and participation in the development of advanced technology, assisting users in carrying out their research projects at national facilities supporting COMPRES high pressure research, and planning an independent research program (coordinating with a supervisor). We encourage candidates to develop a research plan.

Applications are invited at any time. Women and minorities are encouraged to apply. Candidates should send curriculum vita, a statement of research plan, and arrange for three letters of reference to be sent to:

Ann Lattimore, COMPRES Central Office Administrative Assistant

Ann.Lattimore@sunysb.edu

(631) 632-8213



Call for the Newsletter Input

The Newsletter is designed to report new happenings around the COMPRES, and more importantly, breakthroughs in the facility development, scientific research and education programs of COMPRES. Please send your input to the COMPRES central office.



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Chair, Donald J. Weidner, (631)632-8211, Donald.Weidner@sunysb.edu

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