



## Monochromatic Side-Station at X17B2, National Synchrotron Light Source (NSLS) —Jiuhua Chen

*This article describes a project to design and install a monochromatic side-station in the existing multi-anvil high pressure experimental hutch, X17B2, at the National Synchrotron Light Source (NSLS). The project adds new experimental capability using monochromatic x-ray beam. The side-station is designed to operate simultaneously with the main station, and therefore increases the available beamtime for high pressure experiments by a factor of two. The project is initiated through the joint funding from the Department of Defense, Stony Brook University and the NSLS for detection system, staging system and beamline components. First monochromatic beam was delivered in November, 2005. Experiments were conducted using X17B2 main station high pressure apparatus, SAM85. This project is continuing for completion as part of the COMPRES Infrastructure Development program awarded for design and acquisition of a new deformation Tcup (DTcup) high pressure apparatus. The facility will be available to COMPRES community.*

*Experimental Team: Jiuhua Chen, Helene Couvy, Li Li, Hongbo Long, Michael Vaughan, Liping Wang, Donald Weidner, Tony Yu, Zhong Zhong  
Technical Support: Ken Boldwin, Carey Koleda, Bill Huebsch*



Installation of monochromatic side-station in the X17B2 hutch of the NSLS

The superconductor wiggler at the X17 beamline of the National Synchrotron Light Source produces brilliant high energy x-rays. However, as four major research programs share the precious photon beam from the insertion device, beam time available to multi-anvil high pressure research is very limited. Initiated by some seed funding from NSF and Stony Brook University, the NSLS invested more than \$1M to reconstruct the X17 B2 and B3 hutches so that the hutches can operate with x-rays simultaneously. This effectively increased the beamtime for high pressure experiments in the B2 and B3 hutches by a factor of two. Nevertheless, the multi-anvil beamtime is still heavily over-subscribed. Concept of the monochromatic side-station is to install a single bounced mono-

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chromator in the white x-ray beam at the beam entrance of the B2 hutch (Figure 1). This monochromator sends a side beam at a  $2\theta$  angle to the white beam. A full time monochromatic station running simultaneous with the white beam system is therefore possible.

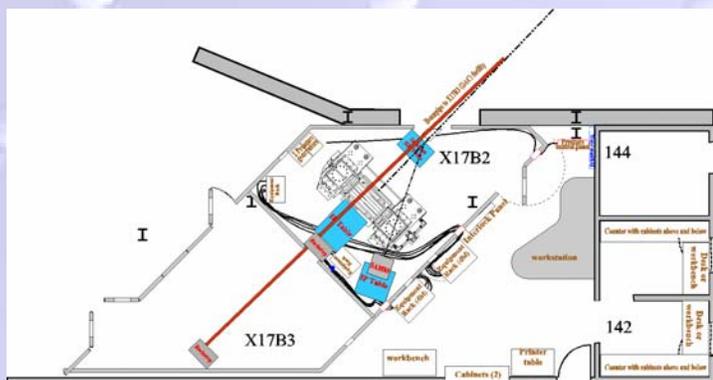


Figure 1. Floor plan of X17B2 and B3 hutches

Design of the monochromator is shown in Figure 2. A silicon single crystal is bent sagittally in one dimension which generates an antisclastic meridional bending, yielding a 2-D focusing.

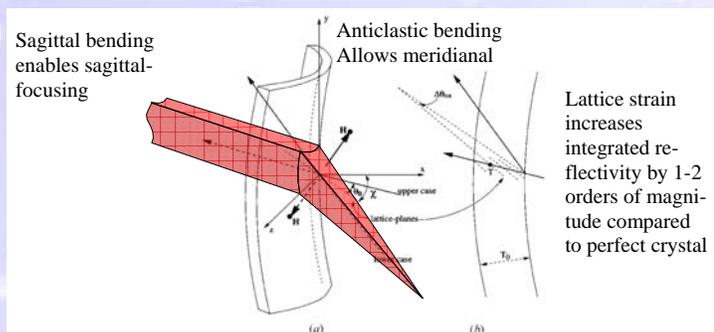


Figure 2. Sagittally bent 2-D focusing monochromator

The first monochromatic beam was delivered from a prototype monochromator in November 2005. Beam intensity was measured using an ionization chamber. The focusing Si(511) crystal provides photon flux of  $1 \times 10^{10}$  ph/sec at energy = 55.3 keV and area of  $200 \mu\text{m} \times 200 \mu\text{m}$ . A MAR345 imaging plate detector is installed on a detector/press combo stage (see figure in the front page), designed and manufactured by Advanced Design Consulting USA, Inc. Experiments were conducted for measuring stress field in cylindrical symmetry and shear configuration deformation cells using D-DIA pressure module. Figure 3a shows the diffraction pattern of  $(\text{Mg,Fe})_2\text{SiO}_4$  at 10 GPa and  $600^\circ\text{C}$  during deformation in D-DIA, recorded on the imaging plate. A 'cake' integration along azimuthal angle converts this pattern into a "cake plot" (Figure 3b).

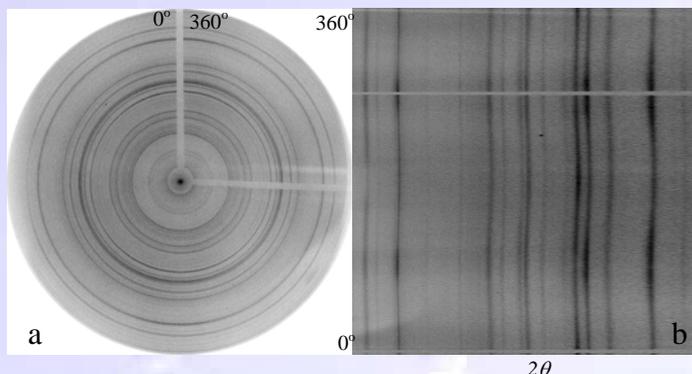


Figure 3. Diffraction pattern of  $(\text{Mg,Fe})_2\text{SiO}_4$  at 10 GPa  $600^\circ\text{C}$  during deformation in D-DIA. a, original pattern on imaging plate; b, converted "cake plot".

Departure from a straight line in the "cake plot" indicates distortions of Debye rings resulted from the cylindrical stress field. Figure 4 shows diffraction patterns of  $\text{Mn}_2\text{GeO}_4$  before (top) and during (bottom) deformation in a shear geometry (left) at high pressure. A clear change in stress field symmetry is observed, illustrated by the shift of azimuth location of  $2\theta$  maximum and minimum in the "cake plot" from top to bottom. For the first time, the stress field of such a shear geometry is mapped out.

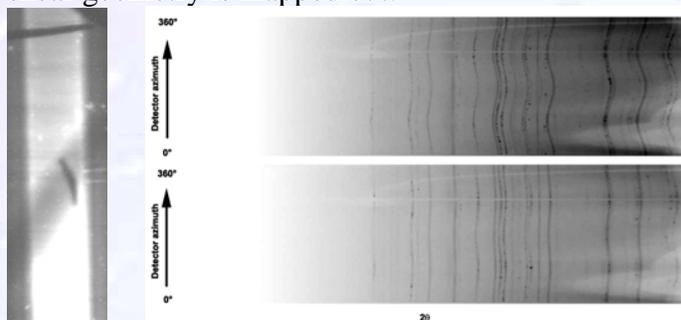
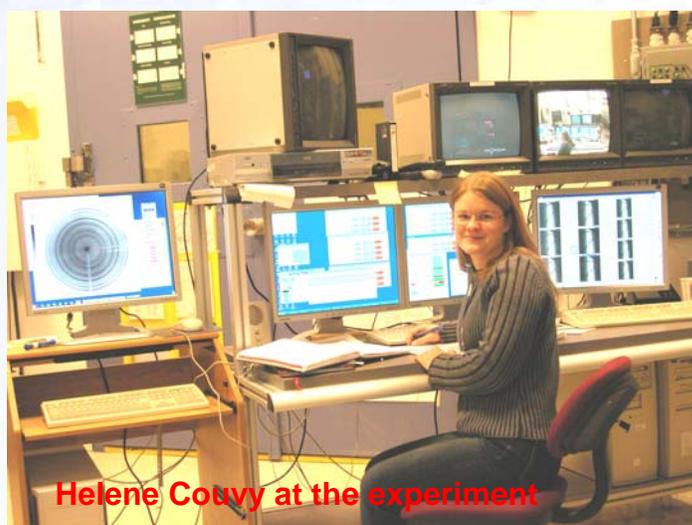


Figure 4. Diffraction patterns of  $\text{Mn}_2\text{GeO}_4$  under shearing



Helene Couvy at the experiment

# President's Message

*Bob Liebermann*

We are proud of the awards and honors recently bestowed on members of the COMPRES community. These include:

At the Fall 2005 AGU Meeting in San Francisco, the following were honored:

Paul Asimow—James Macelwane Medal

Thomas Jordan—Inge Lehmann Medal

Sean Solomon—Harry Hess Medal

New AGU Fellows [honored in New Orleans in May]:

Bruce Buffett, Reid Cooper, David Price, David Yuen, and Vladimir Zharkov.

Alexandra Navrotsky of the University of California at Davis has been selected to receive the 2006 Hess Medal of the American Geophysical Union in a ceremony to be held in San Francisco in December 2006.

The European Geosciences Union recently announced the following honors, which will be awarded in a ceremony to be held in Vienna in April 2006:

Pascal Richet of the Institut de Physique du Globe in Paris has been selected to receive the 2006 Robert Wilhelm Bunsen Medal.

G. David Price of University College London has been selected to receive the Louis Néel Medal.

Guust Nolet of Princeton University has been selected to receive the Beno Gutenberg Medal.

Three members of the COMPRES community were elected as Fellows of the AGU to the Class of 2006:

Michael Hochella from the Virginia Polytechnic Institute and State University.

Catherine McCammon from the Bayreuth Geoinstitut in Germany.

Eiji Ohtani from Tohoku University in Japan.

Daniel Frost of the Bayreuth Geoinstitut in Germany has been selected for two honors in 2006:

Macelwane Medal of the American Geophysical Union.

MSA Award from the Mineralogical Society of America.

COMPRES sponsored or co-sponsored a number of Workshops in the past four months:

A COMPRES-sponsored Workshop on New Directions in High-Pressure Science: Probing Extreme

Conditions with Ultrashort X-ray Sources was held on Dec 3, 2005 at the Advanced Light Source of the Lawrence Berkeley National Laboratory. It was organized by Simon Clark, Yogendra Gupta, Jerry Hastings, Russell Hemley and Raymond Jeanloz and attended by more than 81 people from the extended COMPRES community.

On February 25-26, COMPRES sponsored a NSLS X-ray High Pressure Workshop at the Brookhaven National Laboratory. More than 40 people attended this workshop, which included scientific and technical appraisals of the current status of the X-ray facilities at the X17 beamlines and planning for future developments. The organizers were Jihua Chen, Jay Bass, Thomas Duffy, Mark Rivers, and Donald Weidner. A report on this workshop may be found in this issue and at: <http://www.mpi.stonybrook.edu/NSLS/XHP/product.html>

New institutional members of COMPRES U. S. institutions:

New Mexico State University: Elector: Kanani Lee; Alternate Elector: Boris Kiefer

Louisiana State University: Elector: Bijaya Karki.

This brings the total of U. S. members to 47.

Foreign Affiliates:

Yonsei University in Seoul, Korea. Representative: Yongjae Lee

Institute of Physics of the Chinese Academy in Beijing, China. Representative: Changqing Jin

Institute of Solid State Physics of the University Tokyo: Representative: Takehiko Yagi

This brings the number of foreign affiliates to 23.

On 2-3 November, I attended a meeting of the Science & Technology Steering Committee of the Brookhaven Science Associates on November 2-3 at the Brookhaven National Laboratory. The principal agenda item was the announcement that the NSLS-II project had been awarded Critical Decision-0 by the Department of Energy; now that CD-0 has been achieved, the principal challenge for the NSLS management is to perform the critical development research will lead to CD-0 late next year.

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## President's message *(cont'd)*

COMPRES coordinated and convened a "High Pressure Summit Meeting" on Sept 24-25, 2005 on Long Island, New York. This meeting was held at the suggestion of David Lambert of the NSF-EAR and Nicholas Woodward of DOE-BES. Attendees include representatives COMPRES [H. Green, N. Ross, R. Liebermann], GSECARS [M. Rivers, S. Sutton], NSLS High Pressure Teams [D. Weidner, R. Hemley, M. Rivers, H-k. Mao], HP-CAT [H-k. Mao], SNAP [C. Tulk, J. Parise, R. Hemley, H-k. Mao] ALS-High P Partners [S. Clark, J. Zaug, H. Green], CDAC [R. Hemley], LANSCE [Y. Zhao], and CHESS [D. Bilderback]. On November 29, a subset of the summitters presented their report to the program managers of the NSF and DOE in Washington in late October or November. Representing the High Pressure Group were Green, Hemley, Mao, Rivers, Weidner and Liebermann; the program managers included Lambert, Woodward and Helen Kerch and Roger Klaffky of the DOE Scientific Facilities division.

The major event of December 2005 for COMPRES was surely the Fall AGU Meeting in San Francisco. Highlights included:

a. Many special sessions convened by colleagues in mineral and rock physics, and organized by Steve Jacobsen as the representative for Mineral and Rock Physics on the Program Committee. There were 242 abstracts [2% of the meeting total] submitted under the MRP designation, of which 72 were first-authored by students. This created 7 different special sessions with 80 oral presentations. There were additional papers from our field submitted under the Tectonophysics and Volcanology-Geochemistry-Petrology sections. Our congratulations and thanks to Steve for such a splendid job on behalf of our community.

b. Exhibition booth jointly sponsored by GSECARS and COMPRES, which attracted lots of visitors, and which featured copies of the new COMPRES poster based on the "Bass Report," reprints of the October 2005 EOS article on "The Future of High Pressure Mineral Physics," and COMPRES pocket calendars for 2006. Our thanks to Jihua Chen for creating the PowerPoint presentation, to Ann Latimore for overseeing preparations, and to Glenn Richard and Michael Vaughan for staffing the booth, as well as to Nancy Lazarz and Mark Rivers of GSECARS for their collaboration.

c. We all took special pride in the award of honors and medals to our colleagues in Mineral and Rock Physics and related fields, including:

Paul Asimow—James Macelwane Medal

Thomas Jordan—Inge Lehmann Medal

Sean Solomon—Harry Hess Medal

New AGU Fellows [honored in New Orleans in May]: Bruce Buffett, Reid Cooper, David Price, David Yuen, and Vladimir Zharkov.

d. The Mineral and Rock Physics Focus Group hosted a wine and cheese reception on Dec. 5, sponsored jointly by Almax Industries, Digital Technology, Technodiamant and Oxford Instruments. During the reception, the 2005 Outstanding Student Award in Mineral and Rock Physics was presented to Jennifer Jackson of the University of Illinois at Urbana-Champaign.

e. The Physical Properties of Earth Materials group once again organized a fantastic dinner celebration at the Aziza, a Moroccan restaurant on Geary Blvd. Our congratulations to Brian Bonner and Bill Durham for discovering such a wonderful venue for this special evening.

f. The COMPRES Standing Committees held breakfast meetings to discuss the annual reports on the Infrastructure Development projects and Community Facilities. The Executive Committee met for breakfast on Dec 8 to begin the planning process leading to the submission of the Annual Report for Year #4 and Program Plan and Budget Request for Year #5 to the NSF on February 1, 2006.

g. COMPRES convened a Town Hall Meeting on Thursday, Dec 8 to discuss plans and strategies for submitting a proposal to the NSF in August 2006 for renewal of the Cooperative Agreement for COMPRES for the period May 2007 to April 2012.

A team from the COMPRES community led by Donald Weidner at Stony Brook University submitted a proposal entitled: "Development of a Capability for Improved Stress Resolution using synchrotron X-rays" to the NSF MRI program in January 2006. This team includes as senior personnel: Pamela Burnley (Georgia State University), William Durham (Lawrence Livermore National Laboratory), Harry Green (University of California at Riverside), Shun Karato (Yale University), David Kohlstedt

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## President's message *(cont'd)*

(University of Minnesota), and Yanbin Wang (University of Chicago).

On February 15-16, I visited the Department of Geology at the University of California at Davis as a guest of Charles Leshner and Alexandra Navrotsky. In addition to giving a seminar to the department, I visited the Leshner and Navrotsky labs and met many of their graduate students and postdocs.

On February 17, the Facilities Committee [Mark Rivers, Thomas Duffy, Charles Prewitt] visited the high-pressure beamlines at the Advanced Light Source of the Lawrence Berkeley National Laboratory, hosted by Simon Clark, Raymond Jeanloz and Martin Kunz. Harry Green and I also attended this Site Visit as observers on behalf of the Executive Committee. The other members of the Facilities Committee [William Durham and Abby Kavner] were unable to attend the Feb 17 visit.

From 2-7 March, I participated and lectured in a German-Israel Minerva Foundation School on "Frontiers in High Pressure Research" at a kibbutz on the Dead Sea at Ein-Guedi, Israel. Other instructors/speakers from U. S. institutions included: Ercan Alp, Ronald Cohen, Russell Hemley, Raymond Jeanloz, Vitali Prakapenka. The School was organized by Moshe Pasternak of the Tel-Aviv University. Additional details may be found at: <http://www.minervaschool2006.org.il/>

On March 16-17, I attended a meeting of the Science & Technology Steering Committee of the Brookhaven Science Associates at the Brookhaven National

Laboratory. The principal agenda items were the resignations of the BNL Director, Dr. Praveen Chaudhari (effective 30 April 2006) and Robert Hwang, the Director of the new Center for Functional Nanomaterials. Search processes to fill both vacancies are currently underway.

The membership of the Advisory Committee for COMPRES will be undergoing changes in June 2006. The membership is expanding to six members, who will serve three-year terms, with two members's terms ending each year.

For the current members, their terms will end in:

June 2006: Paul Silver

June 2007, Bruce Buffett, Richard O'Connell

June 2008: Chi-chang Kao, Guy Masters

Two new members will join the Advisory Committee effective June 2006 for 3-year terms:

Wang-ping Chen of the University of Illinois at Urbana-Champaign

Malcolm Nicol of the University of Nevada at Las Vegas.

On 27 March, Jay Bass and I attended a Workshop on Computational Infrastructure in Geodynamics [CIG] organized by Scott King at Purdue University. Jay gave a talk on recent developments in studies of elasticity and equations-of-state and I spoke about the synergetic relationships between COMPRES and CIG which we hope to nurture

On 31 March, I visited the Department of Physics at the University of Connecticut, hosted by Vernon Cormier. In addition to giving a seminar on "Sound Velocities in Minerals under Mantle Conditions", I talked with faculty and students in the department. ■

## Procedures and Planning for COMPRES Renewal Proposal

<b>2005:</b> June 19 Dec 6-8	Open Forum at Mohonk, NY; Breakfast Meetings: Standing Committees/Executive Committee	Dec 8 Town Hall Meeting at AGU
<b>2006:</b> Jan 26 Jan 30	Issue call for submission of "One-Pagers" highlighting the science Issue call for new or renewed initiatives for Infrastructure Development projects, Community Facilities Operations, and Workshops. Deadline: 15 March 2006	Deadline: 22 March 2006
Feb 1	Submit Annual Report for Year #4 and Budget Request for Year #5	
March 15	Deadline for proposals for new or ongoing initiatives for COMPRES in the period 2007-2012.	
April 15	Ex. Com. to receive reports/recommendations from the Infrastruc.Develop. and Fac. Com.	
May 15	Ex. Com. to approve program plan and budget for 5-year renewal proposal and submit to President for formulating a draft proposal for the NSF.	
May 31	DRAFT of proposal and budget plan to be presented to the Executive Committee	
June 16	Revised proposal and budget plan to be sent to the Electorate and the COMPRES community.	
June 20-23	5 <sup>th</sup> Annual Meeting at Snowbird, Utah: Presentation of plan and strategy for proposal.	
Aug 1	Proposal for COMPRES renewal to be submitted to NSF-EAR via FastLane.	

# COMPRES 5th Annual Meeting

snowbird  utah. Registration Deadline: May 16, 2006

Snowbird Alpine Village, 20-23 June 2006

Abstract Submission : <http://www.compres.us/Meetings/2006%2020-23/AbstractsPage.htm>

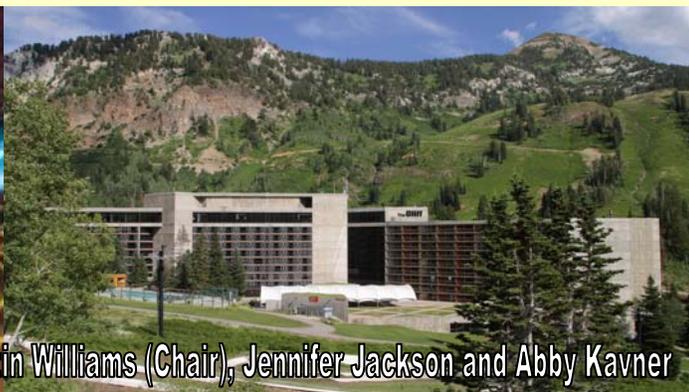
- + *Scientific presentations*
- + *technological presentations*
- + *group discussions*
- + *annual business meeting*

- Members of the COMPRES community will be offered:
  - + double-room accommodation
  - + all meals for the duration of the meeting [starting with dinner on Tuesday, June 20 and finishing with lunch on Friday, June 23].
- Additional details and costs for accompanying persons may be found on the Registration site.
- COMPRES will be unable to cover travel expenses for attendees.

## Travel Scholarship:

Travel scholarships will provide full or partial travel scholarships to those graduate students presenting abstracts for poster presentations at the Annual Meeting. The scholarships include up to \$500 each for travel expenses incurred in attending the Annual Meeting; reimbursement will be via travel vouchers submitted with receipts at or following the meeting. To be eligible for a travel scholarship, the graduate student must do the following:

1. Apply for consideration for a travel scholarship via email to Ann Lattimore [alattimore@notes.cc.sunysb.edu] by May 19, 2006. This application should include the following:
  - (a) Cover page indicating the name, address, telephone number, FAX number and email address of graduate student, and the name and address of the mentor/advisor.
  - (b) Abstract including title and authors, with the applicant as the presenter.
  - (c) A paragraph by the applicant describing where they are in their graduate studies and why they want to attend the Annual Meeting.
2. A letter of recommendation from their mentor/advisor. This letter should also detail the group's travel funding and explain why the travel scholarship is needed for the student.
3. Submit an abstract for a poster presentation via the website (deadline: May 19, 2006) at: <http://www.compres.stonybrook.edu/Meetings/2006-06-20-23/Index.html>. The abstract MUST be submitted for the application to be considered for approval and award of a travel scholarship.
4. Register for the Annual Meeting on the website at: <http://www.compres.stonybrook.edu/Meetings/2006-06-20-23/Index.html>. Note that the deadline for registration is May 16, 2006.



Program Committee: Quentin Williams (Chair), Jennifer Jackson and Abby Kavner



# Recent PhDs



**Junfeng Zhang**  
**Ph.D. 2005**

*University of California  
Riverside*

**Dissertation: Experimental Investigation of the Rheology and Faulting of Eclogite at High Temperature and Pressure**



Eclogite, a rock consisting of mainly garnet and omphacite, plays important roles for mantle convection and geodynamics in subduction zones. I conducted systematic axial compression and shear experiments in a 5 GPa piston cylinder apparatus to investigate the deformation behaviors of eclogite and its constituent minerals under a wide range of temperature, pressure, strain rate conditions and established robust flow laws for eclogite and omphacite. The results show that omphacite is a weak clinopyroxene, which has creep strength between these of diopside and jadeite. Progressive increase of garnet results in a smooth increase in strength. The presence of water can cause a significant decrease in creep strength and a pronounced change of deformation microstructure. Dry eclogite has strength comparable to that of harzburgite; this equality is achieved because the great strength of garnet is compensated by the weakness of omphacite.

The microstructures and fabrics of deformed eclogite specimens are carefully analyzed with scanning electron microscope (SEM), transmission electron microscope (TEM) and electron backscattered diffraction (EBSD) techniques. These results reveal near random crystallographic preferred orientations in garnet under both dry and wet conditions. Garnet remains essentially rigid in dry eclogite when strain is small. Recrystallization of garnet are commonly observed in specimens of high shear strain (>3) or high water fugacity, suggesting that grain boundary effects dominate the deformation and lead to the strong shape preferred orientation in garnet. In contrast to garnet fabric, pronounced S-type and L-type fabrics are found in omphacite associated with the geometry and orientation of the finite strain ellipsoid. They are also consistent with the abundant dislocations revealed by TEM studies which show multiple dominant slip systems of  $\{110\}_{1/2}\langle 110\rangle$ ,  $\{110\} [001]$  and  $(100)[001]$ . Remarkably, these results are similar to observations from deformed eclogites in nature and provide reasonable experimental explanations for several long-standing problems of deformation mechanism and fabric development of garnet and omphacite.

In addition, I have conducted systematic experiments elaborating that a hydroxyl-enriched eclogite develops a faulting instability associated with precipitation of water at grain boundaries and the production of very small amounts of melt (< 1 vol%) at high pressure. This new faulting mechanism satisfactorily explains high-temperature earthquakes in subducting oceanic crust and could potentially be involved in much deeper earthquakes in connection with similar precipitation of water in the mantle transition zone (400-700 km).

Although these experimental investigations have provided some important constraints on the rheology and faulting of eclogite under high temperature and pressure, there are some additional aspects of eclogite rheology that remain to be investigated. Firstly, it could be productive to extend our knowledge of eclogite rheology to higher pressures. Secondly, it would be a significant enhancement if we could validate the eclogite dehydration faulting mechanism for all the pressures at depth. Lastly, it is of great importance to know whether similar dehydration embrittlement can happen with high-pressure hydrous phases in eclogite. Such direct quantitative experimental investigation requires the advance of technology provided by the D-DIA (deformation cubic anvil apparatus) to perform experiments at high pressures (5-20 GPa).

**Statement:** *I consider myself fortunate to have the opportunity to work with and learn from Dr. Harry Green as a graduate student. He helped me build up the understanding of and the interests in the subject of experimental mineral physics. I thank my 'lab family' (Harry Green, Zhenmin Jin, Larissa Dobrzhinetskaya, Frank Forgit, Krassi Bozhilov, Eric Riggs, Haemyeong Jung) for instruction and assistance with all the experimental and analytical techniques as well as maintaining a productive environment. I am currently a post-doctoral fellow at the Geophysical Group (University of California, Riverside) working on development of D-DIA control system and high-pressure assembly with Dr. Harry Green. My long-term research interest is to investigate properties of rocks and minerals under high temperature and pressure. Overwhelming previous experimental work has demonstrated that it provides a powerful tool for a comprehensive understanding of the interior of the Earth. In contrast, the rheological properties of more than 90% of the Earth's mantle are poorly constrained because most quantitative experimental studies have been limited to low pressures (<4 GPa). Many questions remain to be answered but they also provide interesting avenues for research in the future.*

—Junfeng Zhang

# COMPRES Sponsored Workshop

## *NSLS High Pressure X-ray Research* Current and Future vision into NSLS II Feb. 25-26, 2006

In view of rapid advances of *in situ* high pressure research using synchrotron x-rays in the world and growing demands for the use of such high-pressure facilities in the US, a COMPRES/Mineral Physics Institute co-sponsored **NSLS X-Ray High Pressure Research Workshop: Current operation and vision into NSLS II** was held on February 25-26, 2006 at the National Synchrotron Light Source, Brookhaven National Laboratory. The workshop focuses on future scientific and technical directions of the high-pressure facilities at the X17 beamline of the NSLS. These facilities, including both diamond anvil cell and multi-anvil presses, have long played a leading role in many research areas and also served as a test bed for technique and equipment developments for new high pressure experimental stations at the third generation synchrotron sources. Generated by a superconducting wiggler, the x-ray beam remains competitive when compared with all other x-ray sources in the country. To solicit broad range of suggestions from the community, the workshop allocated large fraction of the schedule for breakout sessions. Four scientific breakout sessions include a) Elasticity (Chaired by Andrew Campbell/Gabriel Gwanmesia) b) Rheology (Chaired by Pamela Burnley) c) High pressure phase transition (Chaired by Jie Li) d) Crystallography/melts (Chaired by Darren Locke/Lars Ehm); four technical development sessions include: a) Elasticity (Chaired by Baosheng Li)

b) Rheology (Chaired by Sean Shieh/Helene Couvy/Shenghua Mei), c) High pressure phase transition (Chaired by Kurt Leinenweber/Yue Meng), d) Crystallography /melts (Chaired by Guoyin Shen). In addition the breakout sessions, there were seven keynote speeches: Overview Synchrotron, NSLS 5-year plan, NSLS II (Chi-Chang Kao), X17 Legacy and Passage to NSLS II (Dave Mao), Rheology Measurement at NSLS II (Bill Durham), DAC Research (Tom Duffy), High Pressure Crystallography(John Parise), High Pressure Elasticity (Jay Bass), Multi-Anvil in US (Kurt Leinenweber). There were also two breakout sessions dedicated to discussions of the operation of multi-anvil press and diamond anvil cell beamlines. Near fifty people attended the workshop. Participants highly admire the important role that the high pressure beamlines at the NSLS have played in pioneering and advancing the science and technology in the COMPRES community, and concluded that these beamlines are still critical to meet the demands of high pressure research in Earth science and other scientific disciplines. Summaries of the eight breakout sessions are available on-line at <http://www.mpi.stonybrook.edu/NSLS/XHP/breakoutsession.html>, which formulated the strategic plan and the next COMPRES proposal of MAP and DAC facilities at the NSLS for keeping these beamlines internationally competitive.

— Jihua Chen, Don Weidner, Tom Duffy, Jay Bass, Mark Rivers





It has been a busy and productive year since the last publication of Neutron Corner. I have been helping members of the COMPRES community to write proposals for submission to neutron facilities as well as exploring ways to increase beam time at neutron facilities for high pressure experiments. In that respect, I would like to gratefully acknowledge the help of Dr. Yusheng Zhao and Dr. Anna Llobet Megias of LANSCE, for enabling me to conduct a feasibility study of *lithium aluminum deuteride* [ $LiAlD_4$ ] at high pressure using a Paris Edinburg (PE) pressure cell on the HIPD beam line at LANSCE.

Proposals from the COMPRES community who have been awarded neutron beam time since October 2005 include:

- “High-pressure neutron diffraction study of ALOOD” Project completed at the ISIS (PEARL) - C. Vanpeteghem (VT) and E. Ohtani.
- “Feasibility high pressure study of lithium aluminum deuteride [ $LiAlD_4$ ] and calcite [ $CaCO_3$ ]” using HIPD at LANSCE – H. Sitepu (VT), N. Ross (VT), A. Llobet Megias (LANSCE) and Y. Zhao (LANSCE).
- “Compressibility of layered molybdate ( $MoO_3$ ) powders determined from neutron diffraction studies at high pressure” approved at the LLB, France – H. Sitepu (VT) and Dr. I. Goncharenko (LLB).
- “Investigation of Mg-Al site disorder in shocked  $MgAl_2O_4$  spinel using neutron diffraction” approved at the ISIS POLARIS diffractometer, DIDCOT, UK – Dr. O. Tschauer (UNLV), H. Sitepu (VT), Professors P.D. Asimov and T.J. Ahrens (Cal Tech).
- “Quantitative texture analysis of deformed natural quartz vein from the Torridon area of NW Scotland using neutron diffraction” approved at the FRM-II Stress-Spec diffractometer, Garching, Germany - H. Sitepu (VT), Prof. R.D. Law (VT), and Prof. H.-G. Brokmeier (Tech. Univ. Clausthal).

In addition, there are three proposals on high pressure and texture measurements under review by the committee at the LANSCE. Upcoming proposal deadlines at the HMI, LLB, ISIS, PSI are March 15<sup>th</sup>, April 1<sup>st</sup>, April 16<sup>th</sup> and May 15<sup>th</sup>, 2006, respectively. Please see <http://www.crystal.vt.edu/compres/nsites2.html> for more details.

In other news, the MSA short course on “Neutron Scattering in Earth Sciences” will be held on December 7-8, 2006. Details can be found on [http://www.minsocam.org/MSA/SC/Neutron\\_descrptn.html](http://www.minsocam.org/MSA/SC/Neutron_descrptn.html) or by contacting the Rudy Wenk ([wenk@seismo.berkeley.edu](mailto:wenk@seismo.berkeley.edu)) or Nancy Ross ([nross@vt.edu](mailto:nross@vt.edu)).

## Meetings & Workshops

- MSA Short Course Neutron Scattering in Earth Sciences (December 7-8, 2006, Emeryville, CA, USA). [http://www.minsocam.org/MSA/SC/Neutron\\_descrptn.html](http://www.minsocam.org/MSA/SC/Neutron_descrptn.html).
- Hercules Special Course: Surfaces, Interfaces and Nanostructures (October 8-13, 2006, Grenoble, France). <http://www.esrf.fr/NewsAndEvents/Conferences/HSC/HSC3>.
- Sixth International Workshop on Polarised Neutrons in Condensed Matter Investigations (PNCMI 2006) (September 25-28, 2006, Berlin, Germany). <http://www.hmi.de/bensc/pncmi2006/>.
- 13th International Conference on Small-Angle Scattering (SAS2006 Kyoto) (July 9-13, 2006). <http://sas2006.scphys.kyoto-u.ac.jp/>.
- American Conference on Neutron Scattering (June 18-22, 2006, St. Charles, IL, USA). <http://acns2006.anl.gov/>.
- Quasi-elastic Neutron Scattering Conference (QENS2006) (June 14-17, 2006, Bloomington, IN, USA). <http://www.iucf.indiana.edu/events/qens2006/>.
- European School on Scattering Methods Applied to Soft Condensed Matter (June 10-17, 2006, Bombannes, Gironde, France). <http://www.ill.fr/Events/bombannes/>.
- Sixth Canadian Powder Diffraction Workshop, (May 8th-10th, 2006, Waterloo, Ontario) <http://www.cins.ca/cpdw/>
- Millennium Symposium and European User Meeting (April 27-29, 2006, ILL, Grenoble, France). <http://vitraill.ill.fr/symposium/welcome.jsp>
- Applications of Paris-Edinburgh Cells (April 20-21, 2006, Université P&M Curie, Paris) <http://www.imPMC.jussieu.fr/imPMC/Associations/apec2006.html>
- SNAP 2006 meeting (April 10-11, 2006, Oak Ridge National Laboratory).
- HMI Tutorial Session on Neutron Scattering (February 27-March 6, 2006, Berlin, Germany). ([http://www.hmi.de/bensc/news/tutorial/27\\_tutorial\\_en.htm](http://www.hmi.de/bensc/news/tutorial/27_tutorial_en.htm)).



Neutron Scattering Society  
of America

The new elected 2006-2009 Neutron Scattering Society of America (NSSA) executive committee members are: Roger Pynn (UI at Bloomington), President; Simon Billinge (MSU), Vice President; Angus Wilkinson (Georgia Tech), Treasurer; Suzanne te Velthuis (ANL), Secretary and Greg Smith (ORNL), Membership Secretary. If you who would like to become a member, please fill in the NSSA Application Form <http://www.neutronscattering.org/nssaform.html>.

The newly elected SNS & HFIR User Group (SHUG) executive committee members who will serve from 2006 to 2009 are David Londono (Dupont), Janna Maranas (Penn. State), Leonard Spicer (Duke), Ersan Ustundag (ISU), Igor Zaliznyak (BNL) and Edward Kintzel (SNS). If you who would like to join SNS users list, please fill in the form at the [http://erie.ornl.gov/sns\\_users/AddUsers.cfm](http://erie.ornl.gov/sns_users/AddUsers.cfm).



On a final note, the special relativity formulation discovered by Einstein in 1905, which is probably the best known formula in all science:  $E = mc^2$ , has been verified at the ILL in Grenoble and the MIT to be correct at least to an accuracy of 4 parts in 10 000 000. [http://www.ill.fr/pages/press/eh/press\\_releases/E=mc2.htm](http://www.ill.fr/pages/press/eh/press_releases/E=mc2.htm).

# COMPRES Membership, Renew proposal

## New Institutional Members

### U. S. institutions:

New Mexico State University:

Elector: Kanani Lee;

Alternate Elector: Boris Kiefer

Louisiana State University:

Elector: Bijaya Karki.

### Foreign Affiliates:

Yonsei University in Seoul, Korea.

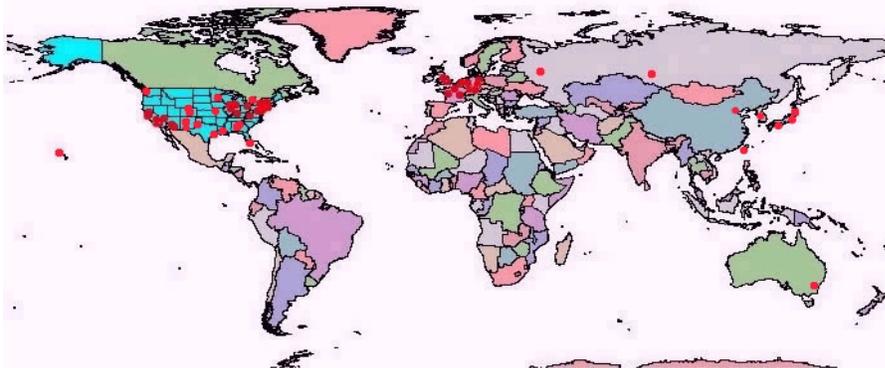
Representative: Yongjae Lee

Institute of Physics of the Chinese

Academy in Beijing, China. Representative: Changqing Jin

Institute of Solid State Physics of the University of Tokyo: Representative: Takehiko Yagi

This brings the total of U. S. members to 47 and the number of foreign affiliates to 23.



## One-pager for COMPRES renew proposal

In the COMPRES renewal proposal to be submitted to the NSF on 1 August 2006, we plan to highlight the scientific and technological achievements of the COMPRES community over the 5-year period of the original COMPRES cooperative agreement [2002-2006]. This is critical for documenting the successes of COMPRES, as well as providing an opportunity to highlight your own research in the COMPRES renewal proposal. Specifically, we would like to showcase those achievements supported by the COMPRES community facilities and infrastructure development projects, or results that

utilize COMPRES-produced results, or other connection to COMPRES [such as preliminary data to precede use of beamlines]. So far, we have received more than fifty entries; we greatly appreciate your attentions and cooperation for submitting your work. Upon many requests from those who have tight teaching and other important duties during this busy period of a year, we have extended the deadline for the one-pager submission to April 28, 2006. The example of submitted entries will be available on-line soon at <http://www.compres.us/onepagers>. Thank you very much for helping us demonstrating our achievements of the COMPRES community.

COMPRES Newsletter  
*Earth Probe*  
Editor: Jiu-hua Chen  
(Neutron Corner: Husin Sitepu)  
Photographer: Michael T. Vaughan, Glenn A. Richard  
Published electronically on  
[www.compres.us](http://www.compres.us)  
Hardcopies are available upon request at  
Rm 167, ESS Bldg. SUNY  
Stony Brook, NY 11733  
or +1 631 632 8213 or  
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