

Annual report of activity: 2006-2007



Task Force-IV

“Ultra-Deep Subduction of
Continental Crust” (UDSCC)



INTERNATIONAL LITHOSPHERE PROGRAM



Mission:

**International coordination and integration for
researches in
*'a frontier of science'***

Promotion of solid Earth's sciences

Educational outreach



The Task Force IV “Ultradeep Subduction of Continental Crust” exists since 2005; it integrates four themes:



- 1. Tectono-metamorphic development of ultrahigh pressure terranes and formation of orogenic belts related to continental collisions.*
- 2. Fluid-rock interaction due to the course of deep subduction and exhumation.*
- 3. Numerical modeling of the fate of continental crust subducted to the deep mantle and mantle transition zones and its geophysical implications for the plate tectonic concept.*
- 4. Synergy of advanced instruments and technologies; their applications to nanometric solid, fluid inclusions, and exsolution products incorporated in ultrahigh pressures minerals from deep subduction zones.*

The Task Force IV unites scientists from 23 countries

- The countries are:
- Australia, Austria, Bulgaria, Canada, China (including Taiwan Academy of Sciences), Czech Republic, France, Germany, Greece, India, Italy, the Netherlands, Norway, Japan, Poland, Slovenia, Slovak Republic, South Korea, Sweden, Switzerland, Russia, UK and U.S.A.



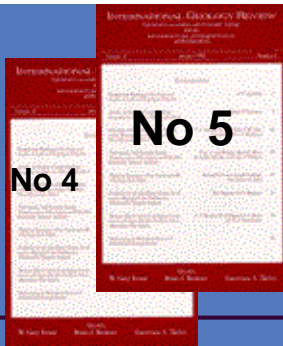
PUBLICATIONS:

- Our active members have published more than 150 papers in international journals such as:
- Nature, PNAS, Geology, EPSL, Lithos, Terra Nova, Chemical Geology, JMG, American Mineralogists, Contrib. Mineral Petrol., J. Petrology, Mineral and Petrol., International Geology Review and others.





SPECIAL VOLUMES



International Geology Review, 2007
Special Volumes: "Metamorphic Conditions and Convergent Plate Junctions: Mineralogy, Petrology, Geochemistry, and Tectonics", no 4 – 5, Ed. G. Ernst



Journal of Metamorphic Geology :
Special Volume
February 2007 - Vol. 25, Issue 2

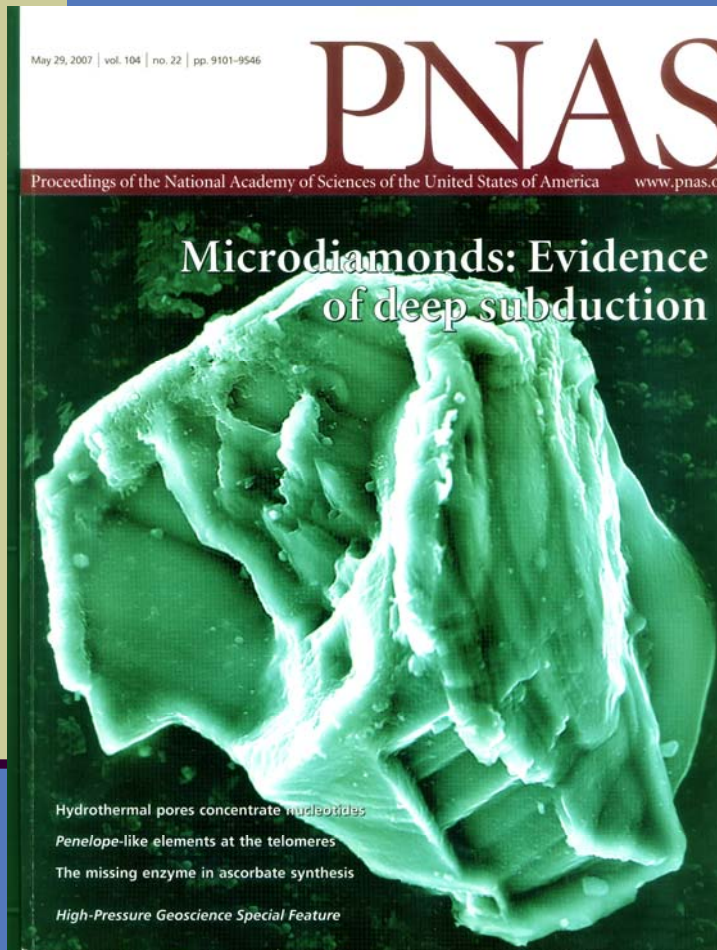
"Multidisciplinary approaches to ultrahigh-pressure metamorphism: a celebration of the career contribution of Juhn G. Liou"

EDs: L. F. DOBRZHINETS KAYA and

J. A. GILOTTI



High-Pressure Geoscience Special Feature: PNAS:104, 2007



Cover page: The diamond from Erzgebirge, Germany

p. 9116 “Very high-pressure orogenic garnet peridotites” – **J.G. Liou, R.Y. Zhang and W.G. Ernst**

p.9122 “The role of mantle ultrapotassic fluids in diamond formation” **Y.N. Polyakov, V.S. Shatsky, N.V. Sobolev and A. Sokol**

p.9128 “ A look inside of diamond-forming media in deep subduction zones” **L. Dobrzhinetskaya, R. Wirth and H.W. Green**

p. 9133 “Shearing instabilities accompanying high-pressure phase transformations and mechanics of deep earthquakes” **H. W. Green II.**



CONFERENCES

**Splinter Meeting
at EGU 2006**

**ILP: New Frontiers in
Integrated Solid Earth Sciences**

**Task Force IV talk “PROGRESS in UHPM
researches” was presented by
co-chair P. O’Brien**

CONFERENCES



ILP Annual coordinating meeting, 12-13 June,
2007: GFZ Potsdam, Germany

“ INTEGRATED SOLID EARTH”

L. Dobrzhinetskaya has presented Task Force IV
annual report and talk:

“Nanoscale geology: a key for understanding
Earth’s interior”.

In my talk I have emphasized:



In the past years we have produced exciting results illustrating the fundamental importance of nanoscale minerals and their effect on geological processes on Earth and other planets.

PLATE 1

CONTINENTAL CRUST

PLATE 2

Task Force members have explored and used in their researches many advanced techniques

LITHOSPHERE

COLLISION

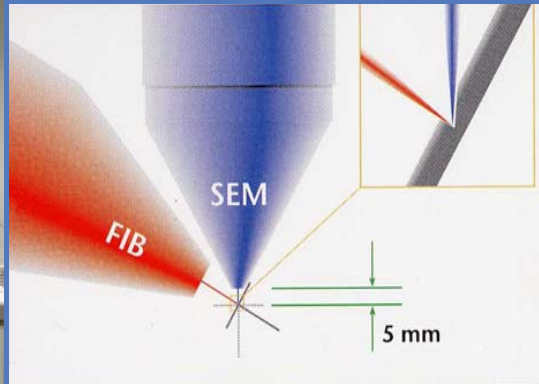
UC RIVERSIDE
UNIVERSITY OF CALIFORNIA

Synchrotron X-ray, IR and Raman studies

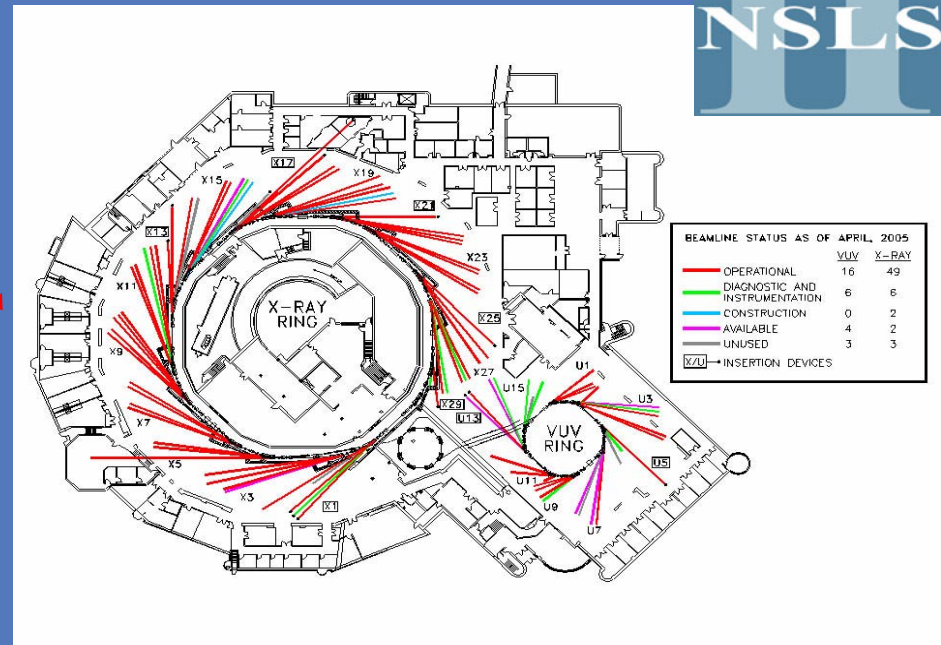
**Cameca NanoSIMS –50,
a new generation of SIMS**



NSLS



**Focused Ion beam- SEM station;
EBSD, EELS, TEM**



CONFERENCES



1. The Western Pacific Geophysics Meeting (WPGM), 24-27 July, 2006, Beijing, China:

Session V31C - Ultrahigh-Pressure Metamorphism and Crustal Melting I

Session V32A -Ultrahigh-Pressure Metamorphism and Crustal Melting II

Total: 12 presentations. Conveners: YF Zheng, K. Ye

2. The Fall AGU meeting, December 10-15, 2006, San Fransisco, USA:

Three Special Sessions: “To What Depth Can Continental Crust be Subducted: Observations From Ultrahigh-Pressure Metamorphic Rocks, Experiments, and Numerical Modeling”

Sessions V-43F, V-44B, V-31A ; Total: 38 presentations, Conveners: L. Dobrzhinetskaya, Y. Ogasawara, R. Wirth

CONFERENCES



3. AGU Joint Assembly 2007, 21-25 May, Acapulco, Mexico.

Special session “Deep subduction zone metamorphism and rheology: role of fluid” , V-51B – oral, 8 presentations.

Conveners: L. Dobrzhinetskaya, H.W., Green, J. Zhang

4. Eclogitic Field Symposium and UHPM Workshop, Portree, Scotland, 29 June -July 6, 2007. Convener S. Cuthbert and colleagues

5. International School of Earth Sciences, 1-9 September, 2007, Odessa, Ukraine. Session: “Ultra-high pressure metamorphism and deep subduction”, Conveners: A.L. Perchuk, L. Dobrzhinetskaya, H. Green, R. Wirth and J-S. Yang. The school promotes studies of UHPM to young scientists and students from Ukraine and other former Soviet Union countries.

CONFERENCES



5. The Fall AGU meeting, 10-14 December, 2007, San Francisco, USA

Proposal for Special session “A Retrospective and Prospective Look at Geology, Petrology, Geochemistry and Tectonics of Ultrahigh Pressure Metamorphic Rocks” are submitted.

Conveners: L. Dobrzhinetskaya, H.-P. Shertl and JS. Yang

We hope that many “UHPM/eclogite” members will attend Fall AGU 2007

**Our conferences activity and
publications
during 2006-2007 demonstrate
our growth, strengths and high
international reputation**



FUTURE PUBLICATIONS

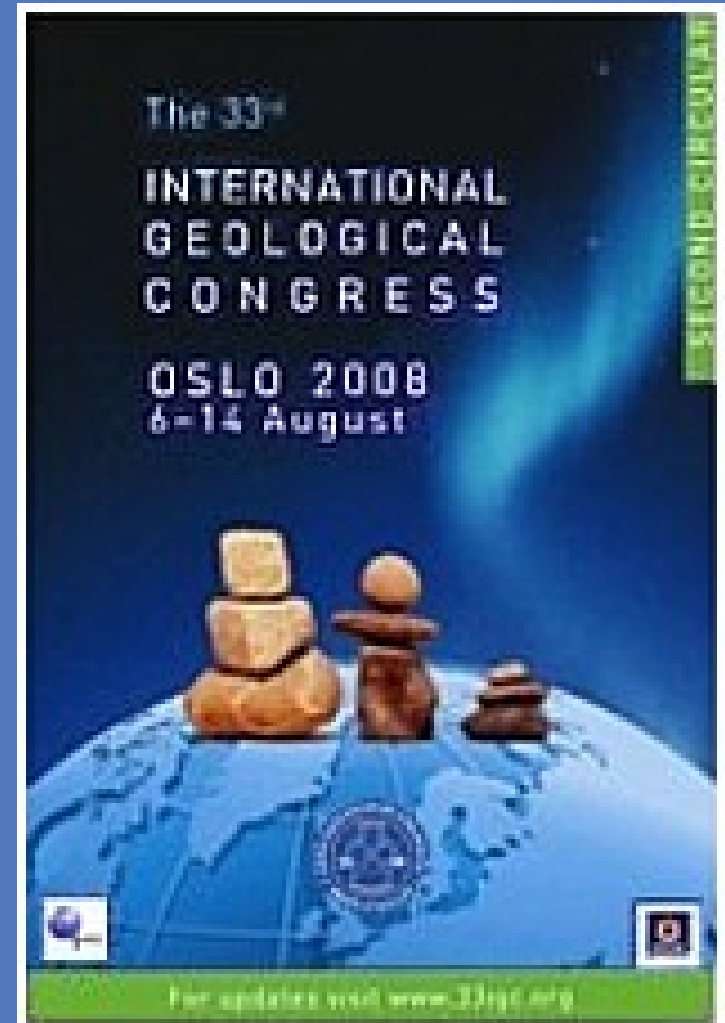


I have received an invitation from Lithos, and recently, from Chemical Geology to make Special Volumes : “UHP Metamorphic Terranes and Deep Subduction”, or “Fluid, Metamorphism and Rheology of rocks in deep subduction zones”

Both invitations indicate a high standing of our discipline within others.

PLANS FOR THE FUTURE

**PREPARATION FOR 33d
INTERNATIONAL
GEOLOGICAL
CONGRESS.
OSLO,
AUGUST 5-14, 2008**



At ILP (June 11-12, 2007) meeting in Potsdam
I have been asked to convene UHPM Symposium at 33d IGC:

“ULTRA-HIGH PRESSURE METAMORPHISM AND DEEP SUBDUCTION”

The Symposium will integrate our efforts in studying Geology, petrology, geochemistry, geochronology, Experimental and numerical modeling related to Deep subduction zone processes.

We have to prepare the list of sessions to be submitted to David Gee at the end of July for the final 33d IGC Scientific Program.

NEW Active Members

**Thomas Lapen – University of
Houston, USA**

**Chris Mattinson – Stanford
University, USA**

**Ikuo Katayama - Hiroshima
University, Japan**

**Shinji Yamamoto - Tokyo Institute
of Technology, Japan**

A background image of a Christmas tree with green and red lights. The tree is dark green with many small, bright green and red lights scattered throughout. The lights are out of focus, creating a bokeh effect. The overall scene is festive and celebratory.

I appreciate all UHPM active members and associates for their activities and contributions