



Geo-soundings

NEWSLETTER – JUNE 2010

Editors: Tanya and Deirdre
Curtin University of Technology
GPO Box U1987, Perth WA 6845

Boris Gurevich
Department of Exploration Geophysics

Enquiries: Tel (08) 9266 3408/3565
Fax (08) 9266 3407

Email eng@geophy.curtin.edu.au
www.geophysics.curtin.edu.au

WELCOME

Welcome to our second edition of *Geosoundings* for 2010. As displayed in this edition, the past quarter has been extremely busy for all academic staff with completion of Semester 1 teaching and examination marking as well as achieving a lengthy list of conference presentations and journal publications. We especially acknowledge Andrej Bona and Boris Gurevich's contributions in organising the 14th IWSA Workshop here in Perth during April.

During the past quarter 2 new academic research staff were appointed, 3 research grants received, and as usual at this time of year, staff and students have kindly participated in student career expos for which we are very grateful. We hope that you enjoy the contents of this newsletter.

JOURNAL/BOOK PUBLICATIONS

Makarynska, D., B. Gurevich, J. Behura, and M. Batzle. *Fluid substitution in rocks saturated with viscoelastic fluids.* *Geophysics*, Vol 25 (2), E115 – E122, March 2010.

Pervukhina, M., **B. Gurevich**, D.N. Dewhurst and A.F Siggins. *Applicability of velocity-stress relationships based on the dual porosity concept to isotropic porous rocks.* *Geophysical Journal International*, Vol 185, 1473 – 1479, April 2010.

Galvin, R., and **B. Gurevich.** *Elastic properties of fractured porous media: Dispersion, attenuation and anisotropy due to fluid flow between pores and fractures.* Lambert Academic Publishing, 2010.

CONFERENCE PRESENTATIONS

The 14th International Workshop on Seismic Anisotropy (IWSA), April 12-16, was held in Hillarys, Perth, Western Australia. The organisers were **Andrej Bona** and **Boris Gurevich** from Curtin University and Greg Ball from Chevron. This workshop continued the great tradition of biennial gatherings of anisotropists, which dates to the early 1980's. This year's workshop was dedicated to the memory of Mike Schoenberg, one of the most prominent and inspirational members of the anisotropic community, who died of cancer in 2008. This workshop was sponsored by CGGVeritas, Woodside,

WesternGeco and Santos. The sponsorship helped to reduce the cost for the participants and offered travel grants for students. There were 71 overseas and local participants from academia and industry, 13 student participants and 31 day participants. The program consisted of 42 oral presentations, 7 posters and a short course. The proceedings from the workshop will be published in *Geophysics Journal*.

Presented Papers:

Dariusz, N., **A. Bona**, and M. Brajanovski, 2010, *Estimation of Thomsen's parameters from p-wave measurements in spherical shale sample:* Presented at the 14th IWSA Conference.

Galvin, R.J., and **B. Gurevich**, 2010, *A model for frequency dependent anisotropy of porous rocks with aligned fractures:* Presented at the 14th IWSA Conference.

Gurevich, B., 2010, *Signatures of fracture- and stress-induced anisotropy:* Presented at the 14th IWSA Conference.

Lebedev, M., A. Bona, R. Pevzner, and B. Gurevich, 2010, *Method and apparatus for laboratory measurements of elastic anisotropy: new approach:* Presented at the 14th IWSA Conference.

Pervukhina, M., **B. Gurevich**, and **P. Golodoniuc**, 2010, *Predicting seismic anisotropy of shales from stress dependencies of their ultrasonic velocities:* Presented at the 14th IWSA Conference.

Pevzner, R., A. Bona, B. Gurevich, A. Shaiban, I. Yavuz, and M. Urosevic, 2010, *Anisotropy estimates from VSP data: CO2CRC Otway project case study:* Presented at the 14th IWSA Conference.

Poster Papers:

Harris, B. D., 2010, *The importance of seismic and hydraulic anisotropy for predictive modelling of large groundwater systems: Perth Basin, Western Australia:* Presented at the 14th IWSA Conference.

Urosevic, M., M. Brajanovski, A. Bona, R. Pevzner, B. Gurevich, D. Nadri, and G. Duncan, 2010, *Integrated analysis of azimuthal anisotropy in North West Shelf of Australia using core, log, VSP and surface seismic data:* Presented at the 14th IWSA Conference.

Presented Papers for EAGE Conference: Barcelona, Spain.

de Paula, O., M. Pervukhina, **B. Gurevich**, **M. Lebedev**, M. Martyniuk, and C Delle Piane, 2010, *Estimation of carbonate elastic properties using nanoindentation and digital images*: Presented at the 72nd EAGE Conference and Exhibition.

Gurevich, B., and **D. Makarynska**, 2010, *Bounds for viscoelastic properties of heavy-oil rocks*: Presented at the 72nd EAGE Conference and Exhibition.

Pervukhina, M., **B. Gurevich**, and **P. Golodoniuc**, 2010, *Exploring trends in microcrack properties of shales using stress dependencies of ultrasonic velocities*: Presented at the 72nd EAGE Conference and Exhibition.

Mueller, T.M., M.H. Grochau, E. Campos, D. Nadri, B. Clennell, and **B. Gurevich**, 2010, *Analysis of sedimentary cyclicity based on x-ray CT images and ultrasonic measurements of core samples*: Presented at the 72nd EAGE Conference and Exhibition.

Mueller, T.M., and P.N. Sahay, 2010, *Porous medium acoustics in the presence of viscous boundary layers*: Presented at the 72nd EAGE Conference and Exhibition.

Pevzner, R.L., **M. Urosevic**, and S. Nakanishi, 2010, *Applicability of zero-offset VSP for time-lapse monitoring – CORCRC Otway Project study case*: Presented at the 72nd EAGE Conference and Exhibition.

Bona, A., and **M. AlMaghlouth**, 2010, *Migration without velocity model in Curvelet Domain*: Presented at the 72nd EAGE Conference and Exhibition.

Shulakova, V., **M. Urosevic**, **R. Pevzner**, and **A. Kepic**, 2010, *Seismic monitoring of CO₂ sequestration in Otway Basin, Australia*: Presented at the 72nd EAGE Conference and Exhibition.

Pevzner, R., **F. Alonazi**, and **B. Hartley**, 2010, *Numerical testing of virtual source method*: Presented at the 72nd EAGE Conference and Exhibition.

GRANTS/AWARDS/HONOURS

Congratulations to **Andrew Greenwood** (in association with his PhD Supervisor **Milovan Urosevic**) and **Elmar Strobach** (in association with his PhD supervisors **Anton Kepic** and **Brett Harris**), who have both received ASEG Research Foundation Grants to support their respective research projects.

Also congratulations to **Boris Gurevich**, **Maxim Lebedev** and **Tobias Müller**, who received a grant of \$117K from the Australia-China Natural Gas Technology Partnership Fund for their *Seismic response to partially saturated gas reservoir zones: towards quantitative recovery monitoring project*.

RESEARCH ACTIVITIES

Milovan Urosevic participated on an expert panel for a project entitled *Expert-Based development of a site specific standard in CO₂ sequestration monitoring technology*, whilst on his trip to the USA in May. The purpose of the project is to develop guidance to assist regulators and operators in determining the most appropriate monitoring approaches and strategy for a CO₂ sequestration site.

Roman Pevzner presented a 1 day short course at the CGGV University in Massy, France, on *Vertical Seismic Profiling* that he and **Milovan Urosevic** developed. The course was designed for students interested in borehole seismic methods and covered VSP basics, applications and approaches for VSP data processing and interpretation.

STAFF NEWS

We would like to welcome 2 new academic staff to our Department.



Vassili Mikhaltsevitch has also been associated with the department as a part time Master of Philosophy student since 2009. Vassili has several degrees including a Master of Science and a PhD in Physics/Mathematics. Since

April, Vassili has been appointed on a three year contract as a Research Fellow and will be working on research and development activities focused on rock physics related to the ARC grant awarded to Boris and Maxim. It is also expected that Vassili will also supervise and teach some of the undergraduate and postgraduate students during his appointment.



Dina Makarynska has been involved with the department since 2007 as a PhD Student and a part time Research Associate working with CRGC. Dina was also appointed in

April on a three year contract as a Research Fellow and will be working on the CO₂CRC2 and CRGC research activities as well as some supervision and teaching of undergraduate and postgraduate students.

EXPOS

Dominic Howman, **Brett Harris**, **Anton Kepic**, **Andrew Squelch**, **Mark Lwin** and Curtin Exploration Geophysics students **Steve Malajczek**, **Thomas Paten**, **Elmar Strobach** and **Hayan Nasreddin** all volunteered at the Careers and Education Expo held 13-16th May at the Perth Convention and Exhibition Centre.

The Geology, Earth and Environmental Sciences Day (GEES Day) was held at the Perth Zoo on May 30th, **Dominic Howman** went and addressed the high school kids that attended.

UPCOMING EVENTS

DMIN: 6th Annual Conference on Data Mining 12-15th July, Las Vegas Nevada USA

ICPIA: International Conference on Physics and its Applications 14th July, Solo Indonesia

ASEG 22nd – 26th August, Sydney Australia.

IAEG Congress 5-10th September, Auckland New Zealand

EAGE Near Surface 6-8th September, Zurich Switzerland

GHGT10 19th – 23rd September, Amsterdam.