Honors & Awards Program and Presidential Session

GEORGE R. BROWN CONVENTION CENTER • HOUSTON, TEXAS
4 P.M., SUNDAY • 6 NOVEMBER 2005

2004-2005 Honors & Awards Committee

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SOCIETY OF EXPLORATION GEOPHYSICISTS
INTERNATIONAL EXPOSITION AND SEVENTY-FIFTH ANNUAL MEETING

J. Clarence Karcher Award

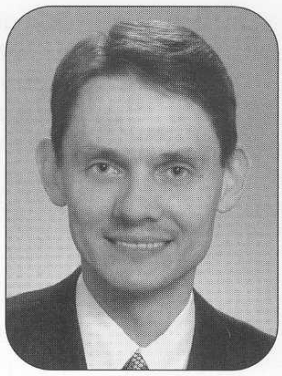
In honor of the memory of Clarence Karcher and his enormous contribution to exploration geophysics, the J. Clarence Karcher Award is awarded in recognition of significant contributions to the science and technology of exploration geophysics by a young geophysicist of outstanding abilities who, in the unanimous opinion of the Honors and Awards Committee and the Executive Committee, merits such recognition. Recipients must be less than 35 years of age on November 1 of the year preceding presentation of this award. A maximum of three awards can be given each year.

Recipients of the J. Clarence Karcher Award

2005	Mustafa Naser Al-Ali Andrey Bakulin Simon A. Shaw
2004	Henning Kuehl Yu Zhang
2003	Edward Jenner
2002	Oleg V. Mikhailov Rob Vestrum
2001	Sergey Fomel Muhammad Saggaf
2000	Fernanda Araújo Gasparotto Tapan Mukerji Tamas Nemeth
1999	Kenneth H. Matson Andreas Rüger
1998	Tariq Ali Alkhalifah John E. Eastwood Jörg Schleicher
1997	Eric Verschuur Spyros K. Lazaratos Vladimir Grechka
1996	Maarten de Hoop David E. Lumley James W. Rector III

The Karcher Award is being given to Andrey Bakulin in recognition of his contributions in the areas of imaging scattering series, time-lapse seismic monitoring, inversion and processing for anisotropic media, rock physics, and fracture characterization.

Andrey has worked extensively with models of anisotropic, porous rocks and methodology for seismic fracture characterization using realistic, azimuthally anisotropic reservoir models. Later work was on inversion of multicomponent reflection data and multi-azimuth walkaway VSP surveys. In addition, Andrey created a tool to predict 4D (time-lapse) seismic response of a reservoir using realistic fluid-flow models and seismic transformations. Most recently, he has worked on virtual source imaging and its application to time-lapse VSP data.



J. Clarence Karcher Award for Andrey Bakulin

by Ilya Tsvankin

Andrey Bakulin immediately made a strong impression on me when we first met in 1996 at the 7th International Workshop on Seismic Anisotropy in Miami. Although it was his first major scientific conference in the west, Andrey delivered a lucid presentation in almost flawless English on the intricate topic of anisotropic poroelasticity. What was most impressive about him, however, was the ease and confidence with which he conveyed his ideas and exchanged opinions with a group of top scientists from all over the world. It was clear that Andrey would soon become a key member of the applied geophysics community, and that expectation is now confirmed by his selection for this award.

The award recognizes Andrey's contributions in such diverse areas as time-lapse seismic monitoring, seismic inversion and processing for anisotropic media, rock physics, fracture characterization, and virtual-source imaging. Most of us tend to have a relatively narrow focus at the initial stage of our careers, so this breadth of research interests is truly uncommon. What is even more uncommon for such a young scientist is Andrey's extensive publication record that already includes two books and 15 papers in peer-reviewed journals.

Andrey grew up in the northern Russian town of Apatity, where his father, Victor Bakulin, worked as a geoscientist. The spectacular geology of this remote region provided the first motivation for Andrey to study earth sciences. Also, his career choice was greatly influenced by his father, a prominent rock physicist, who instilled in Andrey the desire to explore practically important geophysical problems.

As a student at St. Petersburg State University, Andrey began working with Professor Lev Molotkov on effective models of anisotropic, porous rocks. His PhD thesis was eventually published as a book that discusses the anisotropy of fractured and poroelastic media, estimation of fracture parameters from lab measurements, and modeling of point-source radiation in poroelastic Biot media. Andrey continued this research as a faculty member at St. Petersburg University and then as a visiting scientist at Colorado School of Mines (CSM). Andrey's collaboration with the Anisotropy Team at CSM resulted in a series of papers in GEOPHYSICS that introduced a methodology for seismic fracture characterization based on realistic, azimuthally anisotropic reservoir models.

In 1999 Andrey joined the reservoir characterization and monitoring team at Schlumberger Cambridge Research, where he focused primarily on the inversion and processing of multicomponent reflection data and multiazimuth walkaway VSP surveys. Another intriguing research direction pursued by Andrey was the influence of nonhydrostatic subsurface stress on Thomsen's anisotropy parameters. With Schlumberger colleague Romain Prioul, he proved the validity of the nonlinear elasticity theory for describing seismic velocities in stressed rock. This work allowed Andrey to develop and patent a method for estimating the principal stresses from reflection seismic data. While at Schlumberger, Andrey also created one of the first industry tools to predict the 4D (time-lapse) seismic response of a reservoir using a realistic fluid-flow model, and rock-physics transformations. Predictions made by this tool for time-lapse seismic data acquired at Foinaven Field in the North Sea came strikingly close to the observed anomalies and helped to refine the fluid-flow model.

After moving to Shell's Bellaire Technology Center in 2001, Andrey began applying the principle of time reversal in seismic imaging. In cooperation with Rodney Calvert, he devised and successfully tested on time-lapse VSP data the innovative "virtual source method" for imaging and monitoring below a complex overburden. Another promising project involves interpretation of temporal variations in anisotropy due to nonhydrostatic changes of the overburden stress field during reservoir depletion.

Andrey represents a rare type of theoretically strong geophysicist who enjoys all aspects of exploring the subsurface: development of new physical theories and concepts, numerical modeling, design of processing algorithms, and application to field data. He has been able to multiply his personal strengths by actively cooperating with a number of research groups from academia and national laboratories. Andrey has a truly collaborative style of research and is always willing to share his ideas with colleagues and, particularly, with graduate students.

It has been a pleasure to follow Andrey's research, witness his rapid professional growth, and work with him on a number of projects. There is no doubt that the Karcher Award is just one step on his way to many more achievements in the future.