

Andrey V. Pyatigorets

Software Engineer

Expertise

Numerical Modeling, Software Development, Drilling&Subsurface Engineering, Computational Solid Mechanics, Geo-mechanics

Education

PhD (Civil Engineering), 2010
University of Minnesota, Minneapolis, MN, USA

MS (Geological Engineering), 2009
University of Minnesota, Minneapolis, MN, USA

MS (Laser Physics), 2005
Novosibirsk State University, Novosibirsk, Russia

BS (Physics), 2003
Novosibirsk State University, Novosibirsk, Russia

Professional Affiliations

American Rock Mechanics Association, Society of Petroleum Engineers

Honors

Sommerfeld Fellowship Award (2008-2009)

Sommerfeld and Minnesota Supercomputer Institute Travel Awards (2007)

2nd Place Award, Best Research Project of the Year, Institute of Laser Physics, Siberian Branch of Russian Academy of Science, Novosibirsk, Russia (2005)

Professional Experience

2015 – Present

*Itasca Consulting Group, Minneapolis, MN
Software Engineer*

2010 – 2015

*ExxonMobil Upstream Research Company, Computational Science
Function / Drilling & Subsurface Division, Houston, TX
Engineering Specialist*

2005 – 2010

*University of Minnesota, Department of Civil Engineering, Minneapolis,
MN
Research Assistant*

2004 – 2005

*Institute of Automation and Electrometry, Siberian Branch of Russian
Academy of Science, Novosibirsk, Russia
Software Engineer*

2001 – 2005

*Institute of Laser Physics, Siberian Branch of Russian Academy of
Science, Novosibirsk, Russia
Research Assistant*

Project Experience

Tubular Connections Qualification and Quality Assurance: Coordinated projects involving quality assurance of premium tubular connections for use in drilling and subsurface operations by ExxonMobil. Arranged and managed physical testing of premium connections according to EMCEP and ISO standards in ExxonMobil and independent laboratory facilities worldwide. Coordinated communications between drill teams, connections/tubular goods' manufacturers and labs. Conducted and managed FEA of premium connections and provided reports to drill teams regarding connections qualifications and operational limits.

Numerical Software Development for Oil and Gas industry: Conducted research and development of new drilling technologies for ExxonMobil proprietary simulation software product EM^{wells}. Was involved in the development of such technologies as Wellbore Stability, Torque&Drag, Hydraulics and Hole Cleaning, Surge and Swab, Wellbore Uncertainty and others. Provided support and consulting with regard to various drilling technologies to ExxonMobil engineering worldwide. Reviewed patents related to the modelling of drilling and subsurface processes. Taught several educational courses about new technologies and advised company interns.

Research and Numerical Modelling of Composite Materials: Conducted research on micro- and macro-mechanical behavior of elastic and viscoelastic composite materials and thermal stress analysis in viscoelastic composite structures. Developed new mathematical formulation describing thermo-mechanical behavior of composites. Developed computer codes for efficient and precise numerical simulations of strain/stress fields within the medium at any moment of time for fiber-reinforced composites. Developed algorithms and codes for predictions of effective transverse mechanical properties of fiber-reinforced composites. Designed and conducted physical experiments for the evaluation of effective properties of porous materials.

Research in the Area of Geophysics: Conducted research and development of mathematical procedures and computer codes for processing and analysis of large arrays of geophysical data (records of lithosphere and atmospheric pressure micro-oscillations/vibrations, including information about earthquakes and earth tides). Used experimental data obtained from laser interferometers, barometers, and gravimeters.

Research and Numerical Modelling of EM Waves Distribution in Waveguides: Conducted research and development of mathematical formulation and computer codes for simulations of light intensity distribution in planar optical waveguides for predictions of reflection/antireflection coefficients of optical layered systems. Worked on the development of a textbook on the subject of Optical Electronics with examples of computer codes and simulation results.