

# **RENEWABLE ENERGY AND SHALE GAS – FROM INNOVATION TO JOULES**

**Symposium In Association  
With The**

**“TOP 500 INNOVATORS”**

**Polish Scholar Program  
At Stanford University**

**WORKSHOP ORGANIZED BY SCPD, STANFORD  
UNIVERSITY AND BY US-POLISH TRADE COUNCIL  
STANFORD UNIVERSITY 20-21 OCTOBER, 2011**

# AGENDA

## Thursday, October 20, 2011

**Oak Auditorium, Tresidder Memorial Union, Stanford University**

1:30pm - 4:30pm

*Welcome and Introduction*

Prof. Piotr Moncarz

### **Shale Gas**

*Shale Gas in Poland*

Prof. Jan Hupka, Gdansk University of Technology

*Is Tight Shale Gas and Oil the Answer?*

Prof. Sidney Green, University of Utah, Senior Advisor Schlumberger

*Hydraulic fracturing and reservoir stimulation*

Prof. Mark Zoback, Stanford University

*Hydraulic Fracturing and the Environment*

Prof. Davies Ford, University of Texas

## Friday, October 21, 2011

**Fireplace Lounge, Oakwood Apartments, Mountain View**

9:00am - 12:00pm

### **Shale Gas (cont.)**

*Water Technology and Shale Gas*

David Kujawski, RWEA, LA

*Fracking, Mechanical Problems*

Dr. Brun Hilbert, Exponent

*QA/QC - Impact on Environment and ROI*

Jan Krzysiek, Drilable Brusk Co.

*Discussion and Road Map*

# AGENDA

**Friday, October 21, 2011**

**Fireplace Lounge, Oakwood Apartments, Mountain View**

12:00pm - 1:00pm

**Lunch**

1:30pm – 4:30pm

**Renewable Energy**

*Nuclear Energy Update*

Dr. Chaim Braun, Consulting Prof., Stanford University

*Joint Opportunity for R&D and Business*

Marek Samotyj, EPRI, Smart Grid

*Turbines – new technologies, new efficiencies*

Prof. Janusz Badur and Dr. Michal Karcz,  
Polish Academy of Science (PAN) Institute, Gdansk

*Energy Storage and What's New in Batteries*

Celina Mikolajczak, Exponent

Deep Geothermic Energy

Dr. Marcin Lemanski, Polish Academy of Science (PAN) Inst., Gdansk

***Summary and discussion***

Prof. Piotr Moncarz



# **SHALE GAS**

## **PROF. JAN HUPKA**

Since 1997 simultaneously Research Professor at the University of Utah, USA. Developed advanced oily water treatment processes, has extensive experience in organic phase-aqueous phase-solids separations and in the clean-up of oil spills on marine/inland waters and land, implemented new sorbents from scrap tires for oil spill clean-up, and significantly contributed to the development of the tar sand research program at the U/U, USA. His major research interest is in oil-water-solids separation, advanced oxidation techniques, waste utilization/disposal, and applied surface chemistry as used in chemical technology and environment protection against pollution. Teaching: chemical and environmental technology and advanced separation techniques.



## ***SHALE GAS IN POLAND***

## **PROF. SIDNEY GREEN**



Sidney Green is Schlumberger Senior Advisor, and was one of the founders and former President / Chief Executive Officer of TerraTek in Salt Lake City, Utah. TerraTek, a well known geomechanics engineering firm, was acquired by Schlumberger in 2006. Mr. Green is also Research Professor at the University of Utah, where he holds a dual appointment in Mechanical Engineering and Civil and Environmental Engineering. He has worked in the area of geomechanics for over five decades, and has published numerous papers and reports, holds a number of patents, has given many presentations on geomechanics, and has received a number of rock mechanics / geomechanics recognitions. He has served on Government Committees and on many University and National Laboratory advisory boards, and has testified at a number of Congressional hearings. He is a past member of the Greater Salt Lake Chamber of Commerce Board of Governors, and was recently elected a Fellow of the American Rock Mechanics Association. He most recently served as a member of the National Research Council Committee on Destruction of Chemical Weapons and on the National Academy of Sciences Committee on Assessment of Methane Hydrates, and is currently serving on the National Research Council Committee on Induced Seismicity. He is a member of the US National Academy of Engineers.

## ***IS TIGHT SHALE GAS AND OIL THE ANSWER?***

To know if tight shale gas and oil is the answer, we must understand what is the question. The question has to do with providing the energy required by the world. This is a complicated question, with different interests involved and with different economic and environmental impacts. Nevertheless, however the world energy question is posed, it is now clear that the relatively new recovery of gas and oil from tight shales is at least a significant consideration in the answer. The presentation as a first consideration will address the broad understanding of what are the issues for recovering gas and oil from tight shales. Secondly, the presentation will address in a broad manner what are the environmental considerations. Finally, comments will be made on the potential significance of shale gas and oil.

**PROF. MARK ZOBACK**

***HYDRAULIC FRACTURING  
AND RESERVOIR STIMULATION***

## **PROF. DAVIES FORD**

Ford is a practicing environmental engineer with over forty-five years of experience in the field. In addition, he serves on the faculty at The University of Texas at Austin as an adjunct professor, has published more than one hundred technical papers, has co-authored or contributed to ten textbooks, and written two biographies and co-authored one children's book. He has lectured extensively throughout the United States and in countries of Europe, South America, and Asia.



Ford received his bachelor's degree in civil engineering at Texas A&M University and his master and doctorate degrees in environmental engineering at The University of Texas at Austin. He is a Distinguished Engineering Graduate of both Texas A&M University and The University of Texas at Austin as well as a Distinguished Alumnus of Texas A&M.

Ford was elected into the prestigious National Academy of Engineering (NAE). He has served as president of the American Academy of Environmental Engineers and chairman of the Academy Ethics Committee. His honorary affiliations include Tau Beta Pi, Sigma Xi, and Chi Epsilon.

Ford serves on the Board of a publicly-owned oil and exploration company (CWEI, NASDAQ) and the Board of the Texas A&M University Press.

## ***HYDRAULIC FRACTURING AND THE ENVIRONMENT***

I will go through the Hydraulic fracturing process, the water demand, the hydraulics of shale gas and oil, and the fracking and high pressure of water into the pay zones for oil and gas...approx 5,000 to 12,000 feet or deeper. I also will talk about the environmental concerns, risks, and control during and following the fracking process. possible water reuse for frac water..the proven reserves in the U.S. energy policy.. Bottom line....the conventional oil and gas drilling and production is gone...all new wells and old non producing wells will be fraced...Also horizontal drilling has changed the world in oil and gas production...



## **DAVID KUJAWSKI RWEA, LA**

**Mr. David Kujawski: 32 years of waste water and supply water process engineering experience in 46 Oil Refineries; David's recent projects have been featured in: Chemical Engineering Magazine (May 2011) Pollution Engineering Magazine (April 2010) Hydrocarbon Processing Magazine (July 2010) He was the Lead Process Engineer for the Chevron El Segundo Wastewater Plant. He worked Supply Water with Nalco & GE-Betz. He worked Refinery Process & Oilfield Water with Baker-Petrolite. He worked DBOO Wastewater Projects with Chester Engineers & US Filter. He is the founder and Vice-President of RWE.**



## ***WATER TECHNOLOGY AND SHALE GAS***

The future availability of industrial supply water is now a topic of great concern. The increased demand for supply water in the growing deployment of Hydraulic Fracturing drilling techniques may be a limiting factor for the ability to maximize the capture of vast oil and gas resources. Questions on Frac Water management and disposal are currently at the heart of heated environmental discussions. The Stanford University Frac Water Lectures will cover topics on Treatment Technologies, Reclamation & Reuse Configurations, Alternative Sources of Reclaimed Supply Water, and Disposal & Regulatory Considerations.

## **DR. BRUN HILBERT**

Dr. Hilbert has been consulting at Exponent since 1996 in the fields of mechanical and petroleum engineering, with special applications to engineering mechanics and geomechanics. He has worked in the petroleum exploration and production industry for over 25 years. Dr. Hilbert is an instructor at the Professional Engineering Institute and conducts review courses for candidates hoping to obtain their professional license in civil engineering. Prior to joining Exponent, Dr. Hilbert was employed as an Engineering Specialist for Exxon Production Research Company.



## ***FRACKING, MECHANICAL PROBLEMS***

# **JAN KRZYSIEK**

Shale Gas Operation QA/QC Consultant,  
-32 years International engineering experience in oil and gas drilling including Texas and Oklahoma.  
-Last 7 years work for Brunei Shell Petroleum as operation QA/QC consultant on/offshore.  
Currently: Consulting Gdansk University of Technology, Ministry of Environmet and Director DBC UK.



## ***IMPACT ON ENVIRONMENT AND ROI***

Shale Gas operations are sensitive to ROI due to unpredictable impact on environmet and operation issues in hrizontal drilling NPT. Facing HF ban (France and Germany) and discussion in USA I'd suggest to look at stimgun new application.



# **RENEWABLE ENERGY**

## **CELINA MIKOLAJCZAK**

Ms. Celina Mikolajczak is a Senior Managing Engineer in Exponent's Mechanical Engineering practice. She routinely assists industrial, government, and litigation clients with a wide range of battery projects including: cell and battery pack mechanical design evaluation and quality assessment, evaluation of electronic protection approaches, fault detection and mitigation, mechanical and thermal testing of cells and battery packs, abuse testing of cells and battery packs, fire suppression for battery fires, investigation of failed battery packs and cells, cell and battery pack manufacturing auditing, fire investigations of incidents involving batteries, and battery recall support.

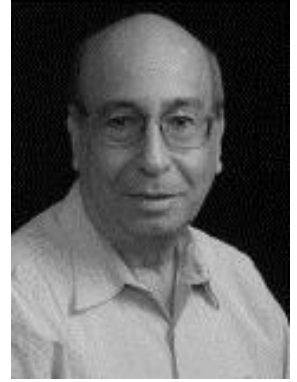


## ***ENERGY STORAGE AND WHAT'S NEW IN BATTERIES***

Lithium-ion batteries have enabled a number of new technologies and created a great deal of excitement about energy storage in general. Battery conferences have multiplied and new developments in battery technology are now reported in the popular press. We will discuss some of the battery technologies that have been proposed for energy storage applications such as backup power, storage for renewal power generation, and grid stabilization. In particular, we will discuss some of the technical challenges in these areas of battery application.

## **PROF. CHAIM BRAUN**

Prof. Braun will address the topic of “Nuclear Power Plants – who needs them and how to choose them?”. He is a CISAC Consulting Professor specializing in issues related to nuclear power economics and fuel supply, and nuclear nonproliferation. At CISAC, he pioneered the concept of proliferation rings dealing with the implications of the A.Q. Khan nuclear technology smuggling ring, the concept of the Energy Security Initiative (ESI), and the re-evaluation of nuclear fuel supply assurance measures, including nuclear fuel lease and take-back. Prof Braun is a member of the World Nuclear Association (WNA) committees on Nuclear Economics and Assured Fuel Supplies. He is a permanent lecturer at the World Nuclear University's (WNU) One-Week Courses. Braun was a member of the Near-Term Deployment and the Economic Cross-Cut Working Groups of the Department of Energy (DOE) Generation IV Roadmap study.



## ***NUCLEAR ENERGY UPDATE***

## **MAREK SAMOTYJ**

Mr. Samotyj currently manages at EPRI energy efficiency-related end-use energy utilization efforts. He was also responsible for development and implementation of R&D plan for IntelliGrid Consortium, public-private initiative established by EPRI in 2001. Before that, he held a position of the Business Line Manager responsible for EPRI Retail Sector's Technical and Business Services. He was also a Power Quality Product Line Team Leader. Before coming to EPRI, Mr. Samotyj was a Research Assistant to the Energy Modeling Forum at Stanford University. He is a member of the IEEE and a member of CIGRE (International Conference on Large High Voltage Electric Systems). He is a recipient of the Year 2000 John Mungenast International Power Quality Award for his lifetime achievements funded by Power Quality Magazine and The Financial Times..



## ***JOINT OPPORTUNITY FOR R&D AND BUSINESS***

**PROF. JANUSZ BADUR**

**DR. MICHAL KAR CZ**

***TURBINES –  
NEW TECHNOLOGIES, NEW EFFICIENCIES***

**DR. MARCIN LEMANSKI**

***DEEP GEOTHERMIC ENERGY***



# PROF. PIOTR MONCARZ

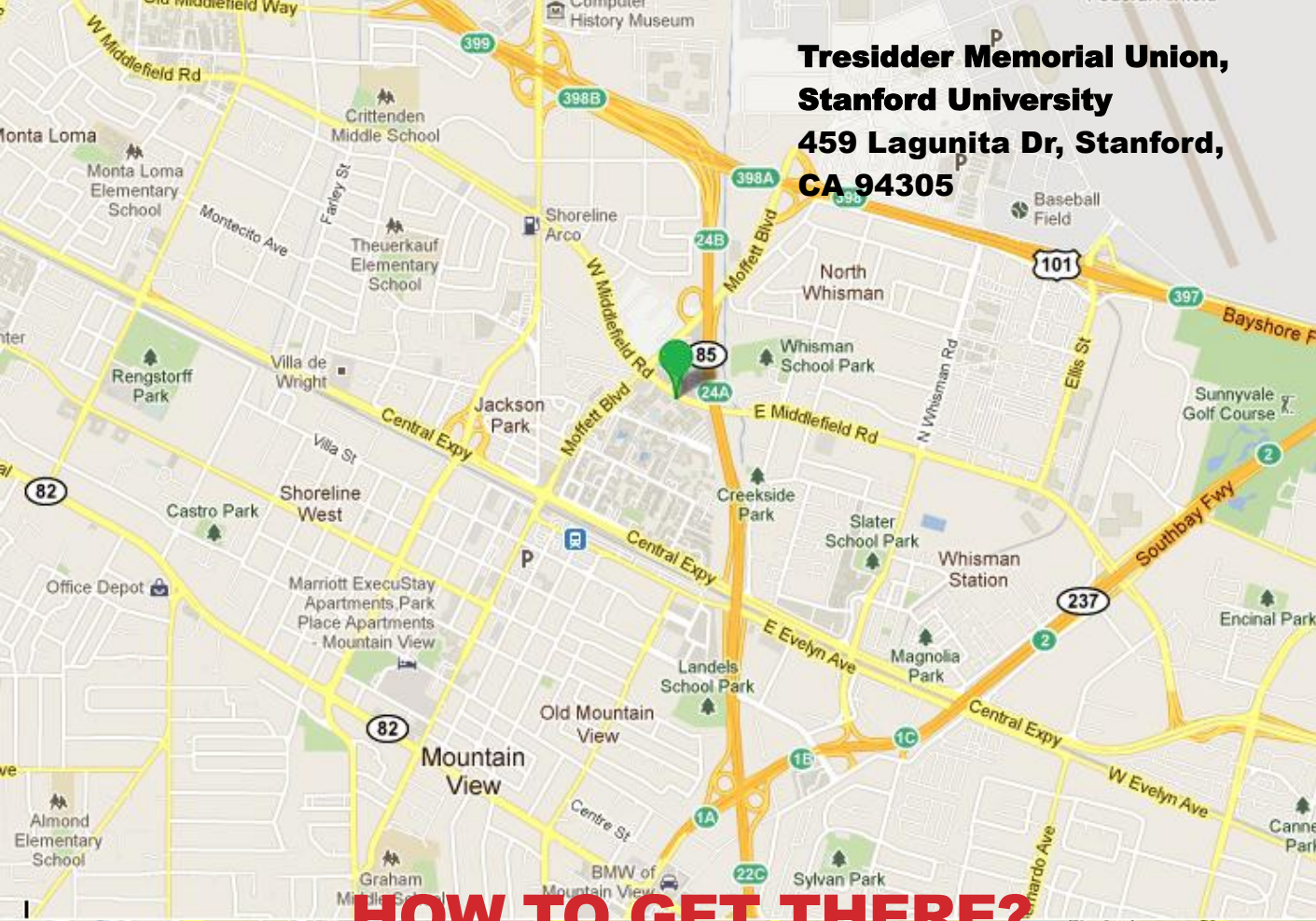
Piotr Moncarz is a Consulting Professor at Stanford University, a Corporate VP at Exponent, a Silicon Valley science and technology public corporation, a member of the Board of the Polish National Center for Research and Development, member of Polish Academy of Science and of Russian Academy of Technological Science, Fellow of American Society of Civil Engineers, co-founder and chairman of US-Polish Trade Council, member of the Advisory Board of Forum Obywatelskiego Rozwoju, FOR, a board member of San Francisco Global Trade Council. He is active in international business from power plant development projects, energy technologies and economics, to high-tech ventures. He is an Academic Director, Top 500 Innovators program at Stanford University' SCPD program for Poland.



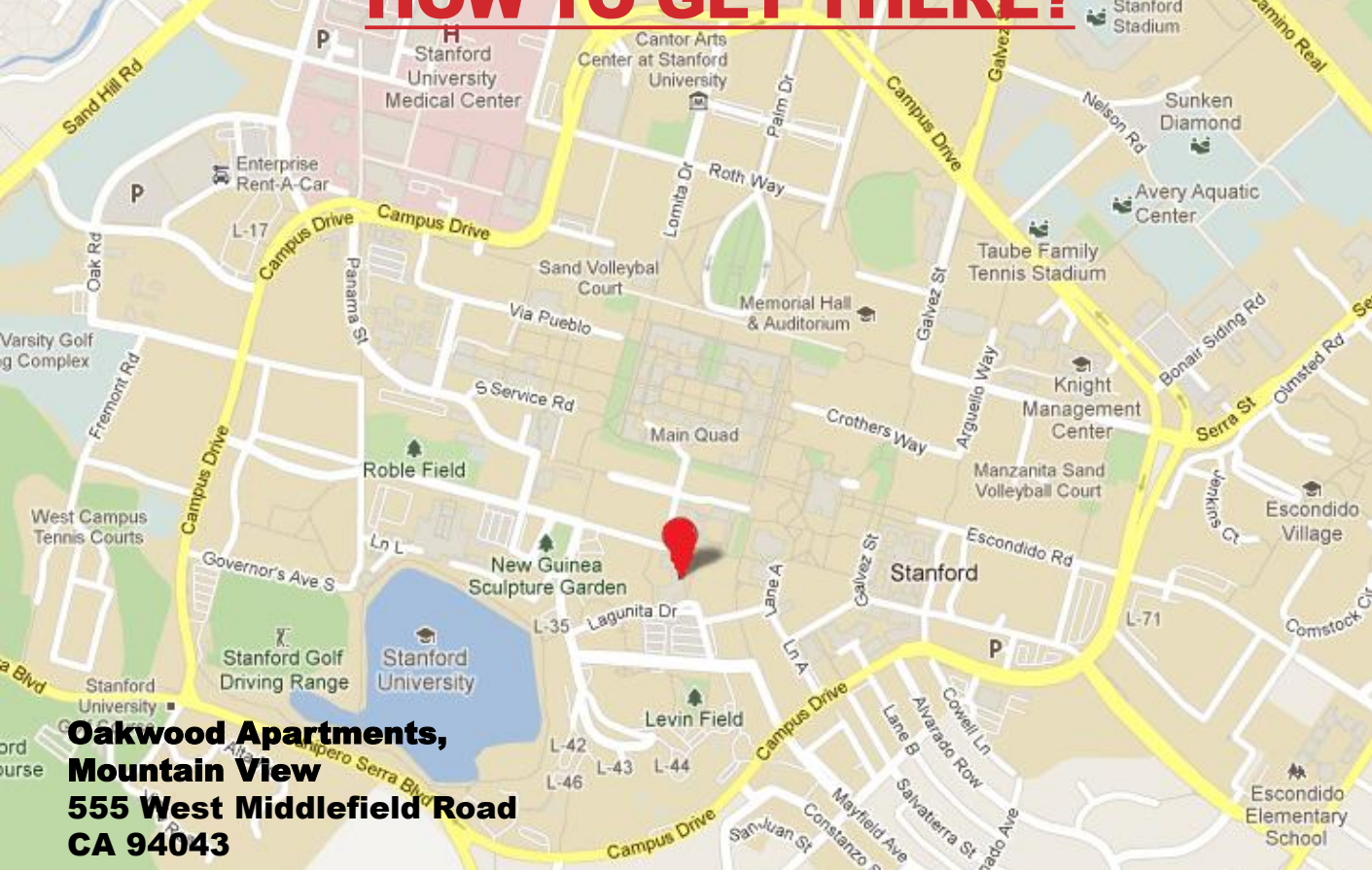
## ***SUMMARY AND DISCUSSION***

*Notes*

**Tresidder Memorial Union,  
Stanford University  
459 Lagunita Dr, Stanford,  
CA 94305**



## HOW TO GET THERE?



**Oakwood Apartments,  
Mountain View  
555 West Middlefield Road  
CA 94043**