



# *Geophysical Society of Pittsburgh*



*Proudly Presents Tuesday, November 4, 2014*

*At*

*The Hilton Garden Inn Southpointe, Canonsburg, PA*

## **2014 SEG DISC Lecturer**

### **Microseismic Geomechanics of Hydraulic Fracture Networks**

**Dr. Shawn Maxwell**

**Abstract:** Microseismic imaging has evolved into a widespread monitoring technology, particularly for tracking the development of hydraulic fracture networks during the development of unconventional reservoirs. Effective hydraulic fracturing is key to successful exploitation and microseismic observations provide critical information about the fracture geometry. Microseismically derived geometry enables a number of different workflows to improve and optimize various aspects of engineering design. However there is also growing interest to further investigate the rock deformation by characterizing the microseismic source strains, including methods such as moment tensor inversion. Interpreting the microseismic source characterization requires an understanding of the relationship between the microseismicity in relationship to the total geomechanical deformations. Microseismicity is often a shear dominated process corresponding to rock movements occurring with time frames consistent with seismic frequencies, and represents a small portion of the rock movement which is principally associated with the aseismic hydraulic fracture is a relatively slow and predominantly tensile process. Nevertheless, by portioning the total geomechanical deformations into components consistent with the microseismic deformation, synthetic microseismic datasets can be simulated. Comparison of such a synthetic microseismic result with the observed microseismicity allows validation of geomechanical simulation of the hydraulic fracture growth and provides an interpretational context to interpret microseismic observations including source characterization. Furthermore, by adjusting the model to match the observed microseismicity increases confidence in the complete geomechanical assessment of the hydraulic fracture growth. Calibrated simulation of the fracture network is a key step towards understanding the reservoir drainage and ultimately improving reservoir management.



**Biography:** *Shawn Maxwell is the President and Chief Technology Officer of IMaGE, Itasca Microseismic and Geomechanical Evaluation products and services. Dr. Maxwell has 28 years of experience in microseismic, and is a pioneer in microseismic fracture imaging services. Prior to joining Itasca, he has been Chief Geophysicist and Microseismic Advisor at Schlumberger, and has also led technology development at Pinnacle/Halliburton and ESG, and as a Lecturer at Keele University in England. Shawn was awarded a Ph.D. specializing in Microseismology from Queen's University in Kingston, Canada.*

*Dr. Maxwell is a member of the SEG, SPE, EAGE and CSEG. He serves on various microseismic-focused committees and workshops around the globe, is the CSEG Education Director, and chairs the CSEG Microseismic User Group. He is also currently the associate editor on passive seismic for Geophysics.*

*Shawn has authored and presented numerous papers on microseismicity in engineering, geophysics, geomechanics and geology journals and meetings. He was selected to be a 2013 SPE Distinguished Lecturer presenting "What Have We Learned About Fracturing Shales After 12 Years Of Microseismic Mapping?"*

**Please RSVP using the PayPal link on the Geophysical Society of Pittsburgh website at: [www.thegsp.org](http://www.thegsp.org)**

**Cost: \$35 Members, \$40 Non-members (\$20 for Students). Meeting Location: Hilton Garden Inn Southpointe, 1000 Corporate Drive, Canonsburg, PA 15317 724.743.5000**



## ***Tuesday, November 4, 2014 Meeting Agenda***

*5:00 pm Social Hour*

*This month's social hour is proudly sponsored by*

***Tideland Geophysical***

***6:00 pm Dinner***

### ***Dinner Menu***

*Roasted Strip Sirloin with Red Wine & Shallot Bordelaise*

*Pan Roasted Chicken with Fine Herbs Jus Lie*

*Cavatapi with Roasted Mushrooms & Tomato Basil*

*Roasted Garlic Whipped Red Skin Potatoes*

*Seasonal Roasted Vegetables*

*Assorted Rolls with Butter*

*Assorted Desserts*

***7:00 pm Lecture***

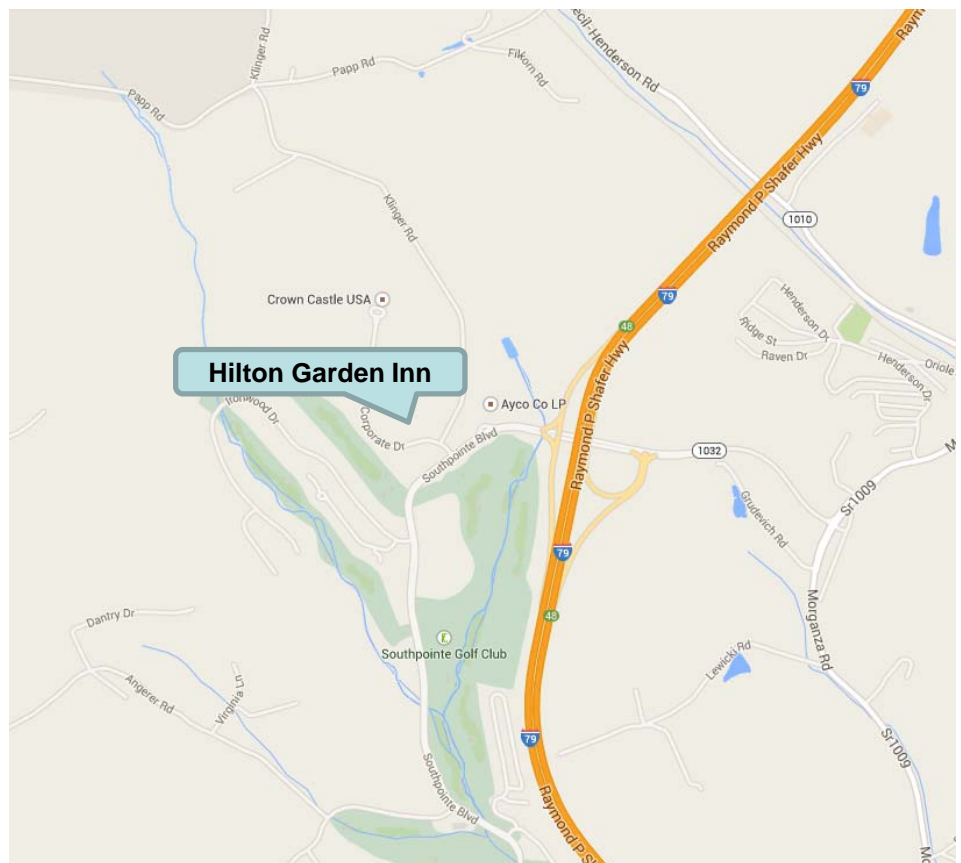
*This month's lecture will be held at :*

### ***Hilton Garden Inn Southpointe***

**1000 Corporate Drive**

**Canonsburg PA 15317**

**724-743-5000**



We would like to thank our 2014-2015 Corporate Sponsors:

**GOLD**



Cabot Oil & Gas Corporation



Where energy meets innovation.



**Geotrace**  
TECHNOLOGIES

**SILVER**



**BRONZE**



---

## 2014 - 2015 GSP OFFICERS

<i>President:</i>	Robert Burger	<a href="mailto:rburger@geotrace.com">rburger@geotrace.com</a>	Geotrace
<i>Vice President:</i>	Jianli Yang	<a href="mailto:yangj@srcx.com">yangj@srcx.com</a>	Seneca Resources
<i>Treasurer:</i>	Thomas Donahoe	<a href="mailto:thomasdonahoe@consolenergy.com">thomasdonahoe@consolenergy.com</a>	Consol Energy
<i>Secretary:</i>	Brian Lipinski	<a href="mailto:blipinski@chevron.com">blipinski@chevron.com</a>	Chevron
<i>Past President:</i>	Joel Starr	<a href="mailto:jstarr@eqt.com">jstarr@eqt.com</a>	EQT



---

### Your Dues and Sponsorship in Geophysical Society of Pittsburgh go toward:

- *Outstanding Monthly Lecture Series*
- *SEG Distinguished Lecturers*
- *Annual Scholarship Awards*
- *Annual Golf Outing*
- *Short Courses*

Please contact Tom Donahoe  
([thomasdonahoe@consolenergy.com](mailto:thomasdonahoe@consolenergy.com)) for  
Sponsorship Opportunities.

---