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The Energy and Environment Initiative (EEi) engages expertise from multiple research disciplines, along with industry leaders and government agencies, NGOs, and the public to develop and promote relevant and impactful activities and research at Rice that have a transformative effect towards Energy Sustainability. Our target audience is our students, faculty, staff, collaborators, and stakeholders in government, industry, and NGOs. For more information, please visit our website at eei.rice.edu.

In this edition we feature several of our key activities for the quarter and set the stage for the third quarter of 2017. We publish this newsletter quarterly and hope you find the material informative and interesting.

RESEARCH ANNOUNCEMENTS

Seed Grants

The next round of grants submitted through the Provost's Creative Ventures Fund – Energy and Environment Awards and funded by EEi will be due on October 16th, and winners will be announced on November 17th. Stay tuned to the award page [here](#), as it contains eligibility, selection criteria, deadlines, and application information. Cross disciplinary teams are not only encouraged but supported by the funding requirements and the Office of Research.

Notable grant progress this quarter includes the pursuit of a DOE Energy Frontiers Research Center (EFRC) being led by Dr. Maarten de Hoop. The EFRC is a multi-university collaboration that would be led by Rice and Dr. de Hoop for mathematical modeling of seismic movements in geologic formations. See Dr. de Hoop's [website](#) for more information about his research. The current anticipation is that the DOE EFRC solicitation will be released in the fall of this year.

Another notable grant in progress is highlighted in the Feature Faculty section of this newsletter, on page 3.



Subsea Systems Institute (SSI)

Progress continues with the continuation of the first wave of grants featured in previous newsletter updates. Funding for the second round that was anticipated this quarter has been delayed but is anticipated in the third quarter – along with additional funding from the Texas Emerging Technologies Fund ([ETF](#)).

A workshop was held this quarter by [Dr. Fathi Ghorbel](#), a Rice-SSI grantee, on underwater subsea autonomous vehicles and was well attended by a number of industry participants as well as collaborators from NASA and the University of Houston. A full list of SSI industry and marketplace Board of Directors and technical committee members can be found [here](#).

COLLABORATIVE AGREEMENTS

Energy & Environmental Research Center ([EERC](#))

The EERC and specific Rice faculty met again in May following the exchange in March, to further discuss potential collaborations. A number of partnership opportunities have surfaced in the area of sensor technology for EERC-related FOAs. The potential grants include significant industry cost share and development opportunities in the field for demonstration. Also, EERC interest in Rice's Nano-Enabled Water Treatment (NEWT) Center will lead to their joining that consortia. EEi will visit the EERC in September with several of our key faculty in mathematical modeling, geology, water treatment, and chemical engineering.



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International Energy Agency's Gas and Oil Technology (IEA GOT)

An MOU was signed by EEi in May with the IEA GOT subcommittee. This MOU defines collaborative areas for Rice to engage the IEA in the pursuit of oil and gas transformative technologies both on shore and especially offshore. Funding from the IEA is granted on opportunity-based work and capability, and this MOU will position Rice to have our capabilities featured.

Norwegian Business School

The Norwegian Business School in Stavanger Norway, has signed an MOU in May with EEi to promote the utilization of EEi's online course, "Leadership and Decision Making in the Energy Industry." Similar agreements are in development with the business schools in Thailand and Singapore.

International Energy Cluster INPART

An LOI has been signed with the International Energy Cluster INPART to promote Rice EEi technology and the online course for implementation in the second half of 2017 and in 2018.

EVENTS

Offshore Technology Conference (OTC) 2017

EEi was engaged in various activities during OTC week in Houston:

The Russian Trade Representation of the Russian Federation in the USA organization and three Russian universities met with EEi to discuss establishing a research, education, and technology exchanges. The key elements include the utilization of EEi's online course in their curriculum and a potential student and faculty exchange. Possible industry supporters and likely sponsors of EEi for this MOU are likely to be BP, Chevron, and Lukoil. An MOU will be codified in the third quarter of this year to formalize the discussions.



The Norwegian delegation and [Subsea Valley](#) cluster hosted several events and promoted EEi in their general sessions and delegation keynote with 7 Norwegian mayors and a number of industry leaders in attendance in the 220+ person delegation.

The Scottish Development Institute has invited EEi to consider a technology exchange that would also include the SSI and associated collaborators for North Sea technology development. Details will solidify in the third quarter of 2017.

EDUCATION

"Leadership and Decision Making in the Energy Industry"

The EEi-developed Rice Online course has undergone several enhancements since the pilot launch in the Fall of 2016, and we will relaunch it on September 18th. Registration is now open, and you can find more information by viewing the EEi [website](#). Our plan is to offer the online course every Fall and Spring semester for the next 3 years.



Additionally, EEi is embarking on Customized Client Engagement (CCE) with a pilot company from a Fortune 500 client to assist with training their global sales force. We will tailor the course to fit their training specifications and incorporate information from their company to emphasize key points of the course. Upon finalization, we will feature the client and specific learning opportunities for their employees within sales, engineering, procurement, and HR. Feel free to contact us should your organization be interested in hearing more about CCEs.

FEATURE FACULTY



Dr. Robert Griffin
Dr. Jamie Padgett
Dr. Philip B. Bedient



[Griffin Research Group](#)
[Padgett Research Group](#)
[SSPEED Center](#)



The featured faculty members this quarter represent multi-disciplinary areas of study and are collaborating on an EEi-sponsored project that directly addresses environmental responsibility in the energy market. The research project, “Simulation of the Release and Fate of Petrochemical Materials from Aboveground Storage Tanks Following Severe Storms in Houston,” is led by the principal investigators identified above, Drs. Griffin, Padgett, and Bedient.

This research project is designed specifically to understand the environmental impacts of the energy industry, to provide solutions to such impacts, to catalyze further research, and to build external relationships with industry, local communities, and our city and state governments. This project, in many ways, defines the ultimate mission and objectives of EEi: to invest in relevant research that enables energy to be more accessible and reliable, more affordable and cost competitive, and environmentally responsible – our definition of true energy sustainability.

Houston is an area subject to hurricanes and harsh environments and has more aboveground storage tanks and pipes per square mile than anywhere else in the world. Our oil and gas and petrochemicals industries require resilience in the face of storm surge and flooding, and we cannot tolerate hydrocarbon releases that have significant safety, public health, environmental, and financial ramifications.

The research detailed in the links provided above include:

- 1) A unique detailed inventory of tankage in the Houston Ship Channel (HSC) as well as a geographic information system model of the HSC.
- 2) Structural predictability models of the tanks and materials of construction and probability failure analysis models of not only the material but also tank flotation and tank shell buckling.
- 3) A combination of storm surge models and estimates of tank failures, to measure and/or predict the impact and consequences of spills forecast for land, water, and air quality.

Ultimately, the result of this multi-phase collaborative research will be an improved capability to determine both the fate and transport of material spilled in post-catastrophic storms and floods. Data collected will directly predict and assess financial and environmental impacts on/of the energy industry and, most importantly, the health and well-being of the communities along the HSC.

This project leverages the collective expertise of structural engineering, hydrology, and atmospheric and environmental chemistry researchers. It also has enthusiastic support from several EEi partners, including the Greater Houston Partnership (GHP), the Rice SSPEED research team relationship with the Houston-Galveston Area Council, the Texas General Land Office, the City of Houston, the Port of Houston, and the US Army Corps of Engineers.

EEi is proud to sponsor the grant to catalyze the valuable work of this research team.

Upcoming Events

July 18-20, 2017

Carbon Management Technology Conference – AICHE and NETL
Houston, TX

August 2, 2017

EEi Quarterly Advisory Board meeting
Rice University

September 13, 2017

The Round Table
Business leaders in the St. Louis community
St. Louis, MO

September 18, 2017

“Leadership and Decision Making in the Energy Industry”
EEi Online Course Launch
[Click here for more information](#)
Rice University

September 18-20, 2017

[EERC](#) Visit
University of North Dakota
Grand Forks, ND

October 3-7, 2017

[Russian Energy Week 2017](#)
Energy Efficiency and Energy Development International Forum – by invitation
Moscow, Russia

October 9, 2017

SPE Annual Technical Conference and Exhibition
EEi keynote on CCUS and EOR
San Antonio, TX

October 15-18, 2017

[2017 Syngas Technologies Conference](#)
Colorado Springs, CO

October 19, 2017

[Houston GPA](#) Fall Forum
Houston, TX

November 3-4, 2017

PetroChallenge 2017 – more details to come!
Rice University

Special thanks to our partners:

