

Petroleum Engineering
Newsletter Spring 2023

FUELLING THE FUTURE

ENGINEERED FOR
WHAT'S NEXT.



Cullen College of Engineering
UNIVERSITY OF HOUSTON

Letter from the Chair



Dear Colleagues,

I am delighted to share some of our department's highlights and advancements from the last six months. We are currently ranked as a top 10 petroleum engineering department, and have made great strides in research and academia. I invite you to read through the following stories, and if you see opportunities for collaboration, do not hesitate to reach out.

Warm Regards,

Mohamed Soliman, Ph.D., P.E., NAI

Department Chair and William C. Miller Endowed Chair Professor
Petroleum Engineering Department
Cullen College of Engineering
University of Houston

UH PE **BY THE NUMBERS**



FACULTY (FALL 2022)

5 NATIONAL ACADEMY OF
ENGINEERING MEMBERS

2 NATIONAL ACADEMY OF
INVENTORS FELLOWS



ENROLLMENT (FALL 2022)

65 UNDERGRADUATE
STUDENTS

82 GRADUATE
STUDENTS



**DEGREES
AWARDED**

(2021 - 2022)



26 B.S.



15 M.S.



6 PH.D.

DINDORUK PART OF SEMINAL STUDY **GEOTHERMAL ENERGY IN TEXAS**

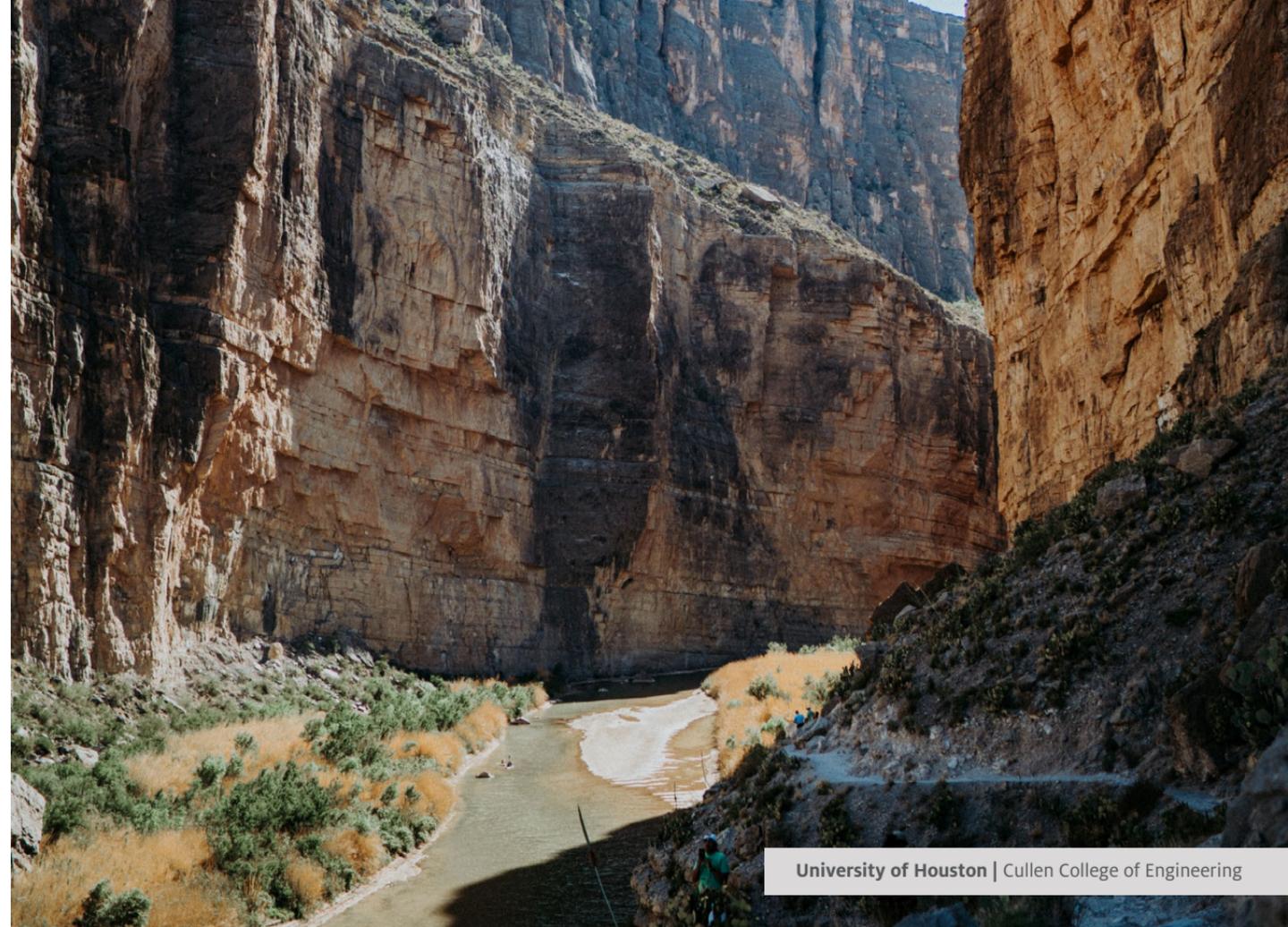


Researchers from five Texas universities, the University Land Office and the International Energy Agency jointly published a landmark study evaluating the potential of geothermal – the naturally occurring renewable energy harnessed from the heat emanating from the earth’s core – as an abundant clean energy source in Texas and its potential to scale globally over the coming decades.

Birol Dindoruk, the American Association of Drilling Engineers Endowed Professor in Petroleum, Chemical and Biomolecular Engineering at the University of Houston and one of the lead authors of the report.

According to the report, numerous geothermal startups have launched in Texas in recent years. Buoyed by oil and gas investments and primarily led by oil and gas industry veterans, these companies are moving quickly to demonstrate entirely new scalable geothermal concepts.

The increasing engagement of oil and gas entities in geothermal is both reflected in and explained by outcomes of the study. Authors report that oil and gas technology and knowledge transfer into geothermal is projected to deliver 20 to 43 percent in cost savings to geothermal, using existing technologies in use in the oil and gas industry today, and that nearly 70% of oil and gas entities engaged with the study reported that there are no geothermal related technical challenges that the oil and gas industry cannot solve. ⚙️





Pictured: Ganesh Thakur

PETROLEUM ENGINEERING

THAKUR TO LEAD ‘BEST AND BRIGHTEST’ SCIENTISTS AND RESEARCHERS IN TEXAS

University of Houston Distinguished Professor of Petroleum Engineering **Ganesh Thakur** has been elected as the next vice president, and eventual president, of the Texas Academy of Medicine, Engineering, Science and Technology (TAMEST). The organization brings together the state’s “best and brightest” scientists and researchers to foster collaboration and advance research, innovation and business in Texas.

Thakur — the first UH faculty member ever elected to lead TAMEST — will help coordinate and guide the board of directors with strategic planning, programs and communication. He will serve a two-year term as vice president beginning in 2023 before becoming president in 2025. TAMEST membership includes all Texas-based members of the National Academies of Sciences, Engineering and Medicine, the state’s nine Nobel laureates and 18 member institutions, including the University of Houston.

A member of the National Academy of Engineering and the National Academy of Inventors, Thakur is a globally rec-

ognized pioneer in carbon capture, utilization and storage (CCUS). His patent on forecasting the performance of water injection and enhanced oil recovery (EOR) using a hybrid analytical-empirical methodology provided a much faster approach and served as an alternative to more time-consuming reservoir simulation. His team continues to research CCUS employing world-class lab research, simulation, machine learning and artificial intelligence.

Thakur is leading the charge to help the University of Houston emerge as the foremost energy university and his efforts are having an immense impact. Under his guidance, UH researchers have performed extensive research on reservoir management and carbon capture and sequestration (CCS). In a \$5 million partnership with Oil India Limited, one of India’s national oil companies, Thakur’s team helped capture carbon dioxide from petrochemical plants to boost oil recovery in several fields in the Indian state of Assam. The project is targeted to help reduce the country’s carbon footprint and increase its ability to fulfill its energy needs. ⚙️

SOLIMAN HONORED AS **2023 LEGEND OF HYDRAULIC FRACTURING**

Mohamed Soliman, William C. Miller endowed chair holder and Chairman of the Petroleum Engineering Department, was recognized as a 2023 Legend of Hydraulic Fracturing at the SPE Hydraulic Fracturing Technology Conference and Exhibition, an annual event held in the Woodlands. John Lee, a professor and the DVG Endowed Chair at Texas A&M University, was also honored this year.

The award dates back to 2013, and to date only 10 other researchers have been recognized as Legends of Hydraulic Fracturing by the SPE fracturing community. Soliman is the only UH professor to receive this prestigious award.

Soliman joined the Cullen College of Engineering as department chairman in 2016, after holding a similar position at Texas Tech and 32-year career at Halliburton. His recent work at UH features his research team investigating test analysis of hydraulic fracturing and the area of plasma stimulation and fracturing as a method of waterless stimulation of reservoirs. ⚙️



Pictured: Mohamed Soliman



Pictured: Clayton Kohn

CLAYTON KOHN NAMED 2023 OUTSTANDING SENIOR FOR THE CULLEN COLLEGE OF ENGINEERING'S PETROLEUM DEPARTMENT

When **Clayton Kohn** was experiencing one of the economic downturns that hit the energy industry and Houston metro area in 2008, he realized he needed to expand his skills and knowledge. He was working industrial construction at the time as a pipefitter, and beyond the work's on-off nature, he was often hundreds of miles away from his home for months at a time.

However, he chose a route that many others wouldn't in their 20s – he enlisted with the Navy on a technical track as a fire control man. He served for six years, making lifelong friends and solidifying his work ethic. That work ethic has now carried over to his studies. He attributes his success to the support system provided by his wife, Monique, and his uncle and aunt, Mike and Christie Byrne. Kohn graduates in May and has already lined up a job with bp. ⚙️



Pictured: Edén Torres

EDÉN TORRES NAMED 2023 OUTSTANDING JUNIOR FOR THE CULLEN COLLEGE OF ENGINEERING'S PETROLEUM DEPARTMENT

Edén Torres was named the 2023 Outstanding Junior for the Petroleum Engineering Department, and one of the 16 students honored across the junior and senior classes of eight branches of engineering at Cullen. He's earned this distinction while also working part-time and being a father for two children – Eliana and Alexander – with his wife, Ana. Torres enrolled at UH in Spring 2021, and his academic success has already been recognized with opportunities outside of the classroom as well. He is completing a co-op with Oxy (Occidental Petroleum), which started in Spring 2022 and runs through the Spring 2023 semester. He also has an opportunity lined up for this summer already. ⚙️

VILLARROEL TAKES 1ST IN REGIONAL STUDENT PAPER CONTEST

A Petroleum Engineering graduate from the Cullen College of Engineering has earned a first-place finish for his presentation at the Society of Petroleum Engineers GCNA/SWNA (Gulf Coast and Southwest North America) Regional Student Paper Contest.

Andres Villarroel, a May 2022 graduate with a Master's degree in Petroleum Engineering, won the contest, which was held virtually this year.

Describing his presentation, Villarroel said, "We proposed a new method to estimate oil volumes in complex reservoirs where conventional methods do not work. The novel method allows for more accurate results and at less expense."

A competitive financial aid package initially drew Villarroel, a native of Bolivia, to UH. He earned his B.S. in Petroleum Engineering from Universidad Privada Boliviana in La Paz. However, it was his academic work that encouraged him to stay.

In addition to this honor, Andres also earned first place in the Society of Petrophysicists and Well Log Analysts Student Paper Contest in March 2022. He is a member of the Tau Beta Pi Engineering Honor Society, and the 2021 recipient of the Chester F. Barnes Scholarship. Andres said he would like to pursue a doctorate, and then seek opportunities in the industry. ⚙️

Pictured: Andres Villarroel



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The University of Houston Cullen College of Engineering

The University of Houston Cullen College of Engineering addresses key challenges in energy, healthcare, infrastructure, and the environment by conducting cutting-edge research and graduating hundreds of world-class engineers each year. With research expenditures topping \$40 million and increasing each year, we continue to follow our tradition of excellence in spearheading research that has a real, direct impact in the Houston region and beyond.

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Fueling 

THE FUTURE