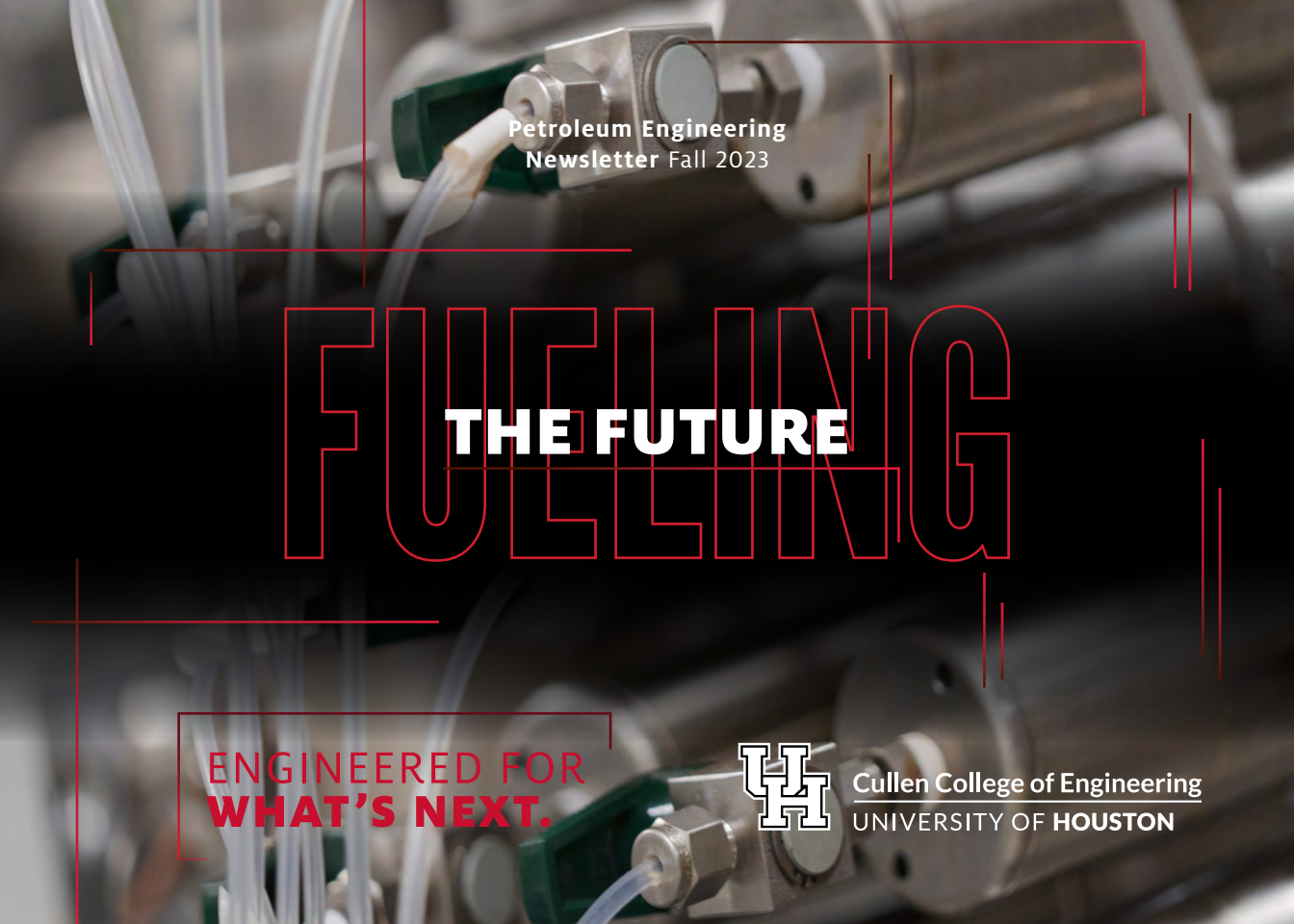

Petroleum Engineering
Newsletter Fall 2023

FUELING 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 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 2023)*

75 UNDERGRADUATE STUDENTS

79 GRADUATE STUDENTS

DEGREES AWARDED *(FY 23)*

15 B.S.

14 M.S.

10 PH.D.

DEPARTMENT HIGHLIGHTS

UH PETROLEUM UNDERGRADUATE ENGINEERING RECOGNIZED AS **NO. 6 PROGRAM**

The Petroleum Engineering Department at the Cullen College of Engineering has again been recognized for productive graduates and return on investment from its degrees, as it was named No. 6 on Steppingblocks' 2022 list of universities for petroleum engineers.

Steppingblocks is a data analytics firm headquartered in Atlanta. The company primarily collects and analyzes four types of data – education, employment, demographic and institutional – for its rankings.

According to Steppingblocks, their methodology narrowed their dataset of 130 million people to 3,147 petroleum engineers, and then examined the top universities by volume when it came to employed petroleum engineers. The University of Houston ranked No. 6 via this methodology.

In the write-up, the average salary for petroleum engineers with a degree from UH was $124,630. Schlumberger, Chevron and ExxonMobil were identified as the three top employers of UH graduates, with the relevant skills of hydraulic fracturing, petrophysics and formation evaluation.

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DINDORUK RECOGNIZED WITH THE **SPE HONARY MEMBER AWARD**

Birol Dindoruk is the American Association of Drilling Engineers Endowed Professor of Petroleum Engineering & Chemical and Biomolecular Engineering at Cullen, and the recipient of the award from the SPE.

According to the organization, "Honorary Membership is the highest honor SPE confers upon an individual. It is limited to 0.1 percent of SPE's total membership and is conferred on individuals for outstanding service to SPE or in recognition of distinguished scientific or engineering achievement in fields encompassed in SPE's technical scope."

Dindoruk has been recognized several times in the past by the SPE and other organizations. He has earned the SPE's Lester C. Uren Award, the Cedric K. Ferguson Medal, and Distinguished Membership before this latest honor.

Pictured: *[center] Birol Dindoruk*

UH PETROLEUM ENGINEERING GRADUATE PROGRAM RANKED NO.9 IN

U.S. NEWS & WORLD REPORT RANKINGS

The Petroleum Engineering graduate level program at the University of Houston's Cullen College of Engineering was named a top 10 school for 2023, according to the latest rankings edition of U.S. News & World Report. It's official rank is No. 9.

Overall, the Cullen College of Engineering was rated as the No.69 graduate school in the nation. As of Fall 2022, the Cullen College of Engineering had an undergraduate enrollment of 3,266, an increase from the previous year. Master's degree enrollment is 1,044, and 558 students are pursuing a doctoral degree. The College awarded 569 undergraduate degrees, 212 Master's degrees and 101 doctorates in FY 2022.

The University of Houston is a Carnegie-designated Tier One public research university recognized by The Princeton Review as one of the nation's best colleges for undergraduate education. UH serves the globally competitive Houston and Gulf Coast Region by providing world-class faculty, project-based learning, high impact research and strategic industry partnerships. Located in the nation's fourth-largest city, UH serves more than 45,000 students in the most ethnically and culturally diverse region in the country.

For the full list of rankings from U.S. News and World Report, please visit: https://www.usnews.com/best-graduate-schools.

University of Houston | Cullen College of Engineering

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: *Ganesh Thakur*

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 recognized 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.

FACULTY PROMOTIONS

KYUNG JAE LEE

ASSOCIATE

PROFESSOR

Kyung Jae Lee has been promoted from Assistant Professor to Associate Professor. Lee joined the college in 2017. Lee's research focuses on subsurface fluid-rock interactions and leading the research projects on clean energy transition. Lee's research has garnered several accolades, including an NSF CAREER Award for her research project entitled "Identifying a New Source of Lithium for Sustainable and Renewable Energy Storage.

PETROLEUM ENGINEERING

AHMAD SAKHAEE-POUR

ASSOCIATE

PROFESSOR

Ahmad Sakhaee-Pour has been promoted from Assistant Professor to Associate Professsor. Sakhaee-Pour joined the college in 2017. Sakhaee-Pour obtained his Ph.D. in petroleum engineering from the University of Texas at Austin in 2012. Prior to coming to UH, he worked as a postdoctoral fellow at the Oden Institute for Computational Engineering and Sciences.

UH RESEARCHERS DEVELOP OIL RECOVERY TOOLS WITH 'SIGNIFICANTLY HIGHER ACCURACY'

A team of University of Houston researchers has developed a series of digital applications to make energy industry processes more efficient. Three innovative online calculators, the most recent being the UH Hydrocarbon Gas Minimum Miscibility Pressure (MMP) Calculator, are available to industry professionals free of charge.

The team is comprised of **Birol Dindoruk**, the American Association of Drilling Engineers Endowed Professor in petroleum, chemical and biomolecular engineering at UH; **Mohamed Soliman**, chairman of the UH Department of Petroleum Engineering; and **Utkarsh Sinha**, who earned a master's degree in petroleum engineering from UH in 2018.

"These apps provide a quick, robust method to provide the MMP value during gas injection with easily available inputs in hand and with a significantly higher accuracy than any of the incumbent methods used in the industry," Sinha said.

"The carbon dioxide/oil phase behavior is very different from the hydrocarbon gas/oil phase behaviors," Dindoruk said. "So, we had to develop different tools with an expanded range of capabilities. We are offering different approaches for the measurement of MMP."

Given the fast-paced energy industry and recognizing that engineers and technical personnel don't necessarily have the luxury to test and implement ideas shared in academic papers, the research team was determined to bring these tools to "the fingertips of the users," added Dindoruk.

By making the apps freely available, the researchers hope to learn from users' feedback to make improvements, and even develop new applications.

Pictured: Mohamed Soliman, Birol Dindoruk, Utkarsh Sinha

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ALUMNI SPOTLIGHT

Pictured: UH petroleum graduate Thales Souza

PETROLEUM ENGINEERING

RESEARCHER DETERMINES SHALE RESERVOIRS COULD BE **SUBSTANTIAL LITHIUM SOURCE**

Stop us if you've heard this one before: a petroleum engineer and an environmental engineer fly to Argentina to participate in the interscholastic Argentina Business Internship Program (ABIP), where they not only spend two months building upon their world-class University of Houston educations with hands-on fieldwork experiences, but also forging strong international relationships within their respective specialties while absorbing the local language, cultural opportunities and excitement of daily life in a foreign country.

UH graduate **Thales Souza** (Master of Science in Petroleum Engineering, 2022) spent two months as ABIP interns this summer, developing valuable knowledge and skills as they worked alongside other students and fellow professionals representing Pan American Energy, Honeywell, Tenaris, CGC and Techint in Argentina. "Although it's only two months long, the internship was optimized so that we spent most our time working on our projects to maximize our experiences. I didn't have field experience before going to Argentina, and that was the main point that made me apply for and accept this internship."

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.

Cullen College of Engineering
UNIVERSITY OF HOUSTON

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