

Curriculum Vitae

Jihye Kim (Hanson) — PH.D, PMP

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Ph.D Chemical engineer with 15+ years of experience in product development, chemical safety, and intellectual property across the oil & gas, water treatment, and agriculture sectors. Holder of 10+ issued patents. Author of 14 scientific articles. Recognized reviewer of a peer-reviewed journal in petroleum science and engineering. Invited speaker & panelist at three industry symposiums. A trusted authority in applied chemistry and field performance. Led the development and commercialization of multi-million-dollar technologies that have been successfully adopted in the field, Recognized with industry awards for innovation and manufacturing excellence. Provide expert analysis on matters requiring deep scientific rigor, product failure evaluation, and real-world application insights.

AREA OF EXPERTISE

**PRODUCT DEVELOPMENT & FAILURES | PRODUCT LIABILITY & SAFETY |
PATENT DISPUTES | TOXICOLOGY & CHEMICAL EXPOSURE | INDUSTRIAL ACCIDENT**

Ammonia Related Explosion
Regulatory Compliance & Safety
Performance & Quality Control

Lab/ Pilot/Field Testing
Field Application & Trials
Process Improvement

Product Development
Commercialization
Product Management

PRODUCT FOCUS: OILFIELD & WATER CHEMISTRY | AGROCHEMICALS | FORMULATION | APPLICATION

Frac Fluid | Oilfield Production Chemicals | Flow Assurance | Asphaltenes | Paraffin | Biocides | Surfactants | Iron Control
Organic Acids | Liquid Fertilizers | Adjuvants | Microfluidics

PROFESSIONAL EXPERIENCE

JKH Expert Consulting, LLC, Houston, TX
Technical Consultant & Expert Witness

2024–Present

- Provide litigation support and expert witness services in product development and failures, product liability and safety, patent disputes, toxicology and chemical exposure, and industrial accidents across the oil and gas, water treatment, and agriculture sectors.
- Deliver technical consulting services to maximize the financial impact of the client's existing or newly developed product packages and applications.

SOLUGEN (Chemical Manufacturing Startup), Houston, TX
Director of Product

2021–2024

- Helped expand the use of eco-friendly, plant-based chemicals in oil & gas, agriculture, & water treatment markets.
- Identified customer needs & developed products solving real-world problems, leading to new business & revenue. prioritized which new technologies to pursue based on business value and customer demand.
- Managed a team of chemists and outside experts. Facilitated collaboration across engineering, business, and R&D teams to bring new chemical solutions to market.

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- Led the successful launch of a winter-friendly product to control iron build-up and scale-up of chemical toll blending of a chemical that removes toxic gas (H₂S), generating millions in revenue.
- Oversaw real-world tests of new biocide (germ-killing) chemicals at oilfield sites in Oklahoma — results unlocked major new sales opportunities.

BAKER HUGHES (Global Oilfield Service Company), OIL FIELD CHEMICALS, Sugar Land, TX 2016–2020
Lead Engineer & Project Manager — Flow Assurance & Enhanced Oil Recovery (EOR) 2017–2020

- Led major technology projects to solve chemical problems in oil production (like clogs and flow issues).
- Developed custom chemical solutions that helped secure long-term, multi-million-dollar contracts for offshore in Latin America for a major oil and gas operator.
- Created a cost-saving product that improved oil flow in cold climates, directly reducing costs for a major customer.
- Developed a first-of-its-kind, eco-friendly chemical to prevent dangerous pipeline blockages in the North Sea, with strong revenue potential.
- Earned top company awards for innovation and manufacturing excellence.

R&D Engineer IV — Flow Assurance & Enhanced Oil Recovery (EOR) 2016–2017

- Provided product recommendations to solve chemical problems during oil production.
- Created new lab tools to understand how chemicals behave in the ground — supporting better product decisions.
- Gave expert talks at company events and led innovation in using small-scale lab models to simulate oil recovery.

BAKER HUGHES (Global Oilfield Service Company), PRESSURE PUMPING, Tomball, TX 2014–2015
R&D Engineer III — Well Stimulation & Production Enhancement | Fracturing

- Led research on how to boost oil output using safer, smarter chemicals in well stimulation.
- Developed test methods to improve chemical efficiency in simulated rock formations.
- Created new, eco-friendly frac fluids for use in offshore oil production for North Sea.

TEXAS TECH MICROFLUIDICS LABORATORY, Lubbock, TX 2009–2014
Graduate Student Research & Teaching Assistant

- Conducted hands-on lab and computer research to understand fluid behavior at a microscopic level.
- Teaching assistant to Chem.E. undergraduate level fluid-mechanics class or two semesters.

TEXAS PETROCHEMICALS (TPC Group), Pasadena, TX 2013
R&D Intern

- Designed & built a lab-scale chemical pilot reactor to test new product ideas and to increase chemical production.
- Developed a new industrial chemical product and helped solve production issues in real time.

EDUCATION & PROFESSIONAL DEVELOPMENT

Doctorate, Chemical Engineering | TEXAS TECH UNIVERSITY, Lubbock, TX, 2014

Coursework, Engineering Management | UNIVERSITY OF INCARNATE WORD, San Antonio, TX, 2009

Bachelor's Degree, Industrial Chemistry | SANG MYUNG UNIVERSITY, Seoul, South Korea, 2009

Leadership Fundamentals, Solugen, 2022

Project Management Professional (PMP) Certification, PMI, 2021

CULTIVATE Leadership Program, Baker Hughes, 2019–2020

Engineer Development Program I, II, III, Baker Hughes, 2015–2018

INDUSTRY IMPACT

Select Thought Leadership Roles

- Journal Reviewer — Journal of Petroleum Science & Engineering, 2017–Present
- Mentor & Mentoring Chair — Soluwomen, Solugen, 2023–2024
- Newsletter Editor — Baker Hughes Chemistry Community, 2018

Awards

- **Solugen - Spot Bonus (2024)**
Awarded a performance bonus for leading successful field tests of a germ-control product (biocide), helping win a major new energy customer.
- **Baker Hughes - Long-term Incentive Award (2020)**
Received a company-wide long-term incentive award for major contributions to new product development and business growth.
- **Baker Hughes - Oil Field Service Chemicals Best Manufacturing Award (2020)**
Recognized for leading the year's best manufacturing project — improving efficiency of a chemical process.
- **Journal of Petroleum Science & Engineering - Outstanding Reviewer (2018)**
Named Outstanding Reviewer for expertise in evaluating scientific research submissions.
- **Baker Hughes - R&D Group Manager's Award - Performance category (2017)**
Honored by R&D leadership for exceptional performance and innovation in chemical solutions.

Invited Speaking Engagements

- Panelist at Women in Chemicals Conference 2024 — Topic: Fostering a Culture of Rapid Innovation
- Invited speaker at Baker Hughes Chemistry Symposium 2018 — Topic: Microfluidics in Oil and Gas
- Invited speaker at Oil & Gas Chemistry Workshop 2018 — Topic: Microfluidics in Oil and Gas

Professional Affiliations

1. American Institute of Chemical Engineers (AIChE), 2010-2014
2. American Chemical Society (ACS), 2010-2014
3. Society of Petroleum Engineers (SPE), 2015-2020
4. Produced Water Society, 2024
5. Council of Producers & Distributors of Agrotechnology (CPDA), 2023
6. Project Management Institute (PMI), 2021-Present
7. Women in Chemicals, 2024-Present

Publications

Patents

1. **WO2025019718A2 (2025)**, Alkaline extraction compositions and methods of making and using same.
2. **WO2024036107A1 (2024)**, Plant biostimulant and methods of making and using the same.
3. **WO2024173923A2 (2024)**, Feed compositions.
4. **WO2024138026A2 (2024)**, Multifunctional bio-based additives.
5. **WO2024229388A2 (2024)**, Bio-based multifunctional additives for hydrocarbon desalting.

6. **WO2024226635A1 (2024)**, Bio-based additive.
7. **US20240383820A1 (2023)**, Biobased micronutrient compositions for agricultural processes.
8. **WO2022261349A (2022)**, Compositions and methods for dissolution of iron sulfide.
9. **US20240294848A1 (2022)**, Bio-based cleaner additive.
10. **US10738576B2 (2020)**, Utilizing microfluidics as a rapid screening technology for enhanced oil recovery.
11. **US10436003B2 (2019)**, Fluid blocking analysis and chemical evaluation.

Technical Papers & Thesis

1. **Dimensionless numbers defining the onset of dispersed phase flow transitions in microfluidic flow-focusing devices.** *Physics of Fluids*, 2025. Potdar, S. V., Soni, P., Kim, J., Boehm, M., & Baier, S.
2. **Needs for improving asphaltene treatment programs.** *International Petroleum Technology Conference*, 2020. Jennings, D., Breitigam, J., Kim, J., Jankowski, S., & Grutters, M.
3. **Microfluidics Technology for Visualizing Surfactant Performance in Enhanced Oil Recovery.** *20th European Symposium on Improved Oil Recovery*, 2019. Kim, J., Willmott, E., & Quintero, L.
4. **Asphaltene inhibitor testing: Comparison between a high-pressure live-fluid deposition and ambient pressure dead-oil asphaltene stability method.** *Offshore Technology Conference*, 2018. Jennings, D. W., Chao, K. P., & Kim, J.
5. **Choosing surfactants for the Eagle Ford shale formation: Guidelines for maximizing flowback and initial oil recovery.** *SPE Rocky Mountain Petroleum Technology Conference/Low-Permeability*, 2016. Kim, J., Zhang, H., Sun, H., Li, B., & Carman, P.
6. **Engineering hydraulic fracturing chemical treatment to minimize water blocks: A simulated reservoir-on-a-chip approach.** *SPE International Conference and Exhibition on Formation Damage Control*, 2016. Kim, J., Gomaa, A. M., Zhang, B., Qu, Q., Nelson, S., & Zhang, H.
7. **Novel evaluation method of surfactant and clay inhibitor performance on fracturing fluid recovery for Eagle Ford and Mancos outcrop shale cores using NMR technique.** *SPE International Conference and Exhibition on Formation Damage Control*, 2016. Kim, J., Gomaa, A. M., Zhang, H., & Nelson, S. G.
8. **Novel evaluation method of fracturing fluid additives on Barnett and Marcellus outcrop shale cores using NMR technique.** *SPE Hydraulic Fracturing Technology Conference and Exhibition*, 2016. Kim, J., Gomaa, A. M., Zhang, H., & Nelson, S. G.
9. **High-temperature fracturing fluid with seawater: Economical control for precipitation and scale.** *SPE Asia Pacific Hydraulic Fracturing Conference*, 2016. Sun, H., Kim, J., Gomaa, A. M., Shen, D., & Carman, P.
10. **Quantify the Fracture Fluid Invaded Inside Shale Formation: NMR Study.** *SPE European Formation Damage Conference, Budapest, Hungary*, 2015. Kim, J., Gomaa, A. M., Zhang, B., Qu, Q., Nelson, S., & Zhang, H.
11. **New Insights into fracturing fluid additives and their interaction in shale outcrop cores using NMR techniques.** *SPE European Formation Damage Conference and Exhibition*, 2015. Kim, J., Gomaa, A. M., Zhang, B., Qu, Q., Nelson, S., & Zhang, H.
12. **Drop-based Microfluidics and Crystallization Studies.** *Texas Tech University*, 2014. Kim, J.
13. **Microfluidic production of spherical and nonspherical fat particles by thermal quenching of crystallizable oils.** *Langmuir*, 2013, 29(39), 12307-12316. Kim, J., & Vanapalli, S. A.
14. **Growth kinetics of microalgae in microfluidic static droplet arrays.** *Biotechnology and Bioengineering*, 2012, 109(12), 2987-2996. Dewan, A., Kim, J., McLean, R. H., Vanapalli, S. A., & Karim, M. N.