

Randal Hill, Ph.D., Principal Consultant and Expert Witness
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Experienced and respected Consultant, Expert Witness, and Scientist with deep and broad experience in materials science, chemistry, physical chemistry, analytical chemistry and chemical engineering. As Patent Scientific Advisor at Flotek, he developed successful responses to more than 100 patent application rejections, growing the patent portfolio by more than 1500%. Uniquely wide experience of applying chemistry in surface problems including adhesion and emulsions, bio-derived surfactants, silicones, nanotechnology, electronic displays, agricultural adjuvants and oilfield chemicals. Readily adapts his experience and knowledge to new problems.

Product Development & Innovation: Influencer behind individual and collaborative innovations in the areas of polymers, surfactant applications, agricultural adjuvants, emulsions, microemulsions, and silicones. Career defining innovations include the serendipitous development of superhydrophobic silicone nanofibers, leading-edge microemulsion treatments with new dimensions of performance, and momentous diversification of Flotek's patent portfolio (which grew by 1500%).

Thought Leadership: Distinguished product innovator credited with 69 patents. Involved member of multiple organizations, including American Chemical Society, Society of Petroleum Engineers, American Physical Society, and American Oil Chemists Society. Author of 60 publications, including an authoritative book: "Silicone Surfactants." Highly awarded inventor with accolades that include 3 Dow Corning Technical Achievement Awards, as well as the 2017 AOCS Samuel Rosen Award for Surfactant Chemistry.

Career Progression

Kodiakhill Services LLC	Honor, MI
Consulting and Expert Witness Services	April 2020 to present
Provided consulting services on projects including firefighting foam for wildfires, new silicone antifoams, formulation of an agricultural emulsion, bio-derived gemini surfactants, sustainability in the silicone industry, invert emulsion oil well drilling mud, antifungal coatings for outdoor architectural surfaces, and processes to manufacture silicone microemulsions. The common thread is applying materials science to control surfaces.	

Flotek Chemistry LLC	Houston, TX
Research Fellow	June 2015 to April 2020
Lead product development work as both an individual contributor and team/project manager on projects involving microemulsion formulation challenges and quantitative methods for reservoir characterization. Developed and leveraged a comprehensive understanding of Flotek's products to improve performance, communicate product	

characteristics for business and promotional purposes, and formulate the next generation of products tailored to market requirements and demand. Achieved diversification of surfactant and CnF® solvent chemistry to provide cost effective and generally improved performance in lowering surface tension, enhancing wetting, providing demulsification, and achieving freeze protection. Discovered that certain low surface tension solvents in microemulsion give surface tension values in confined pore space of a dry/wet gas well far below the surfactant alone to increase flowback and well productivity. Patent applied for, and concept formulated into a new kind of product introduced to the gas well market in early 2020. Invented a new kind of agricultural adjuvant based on bio-sourced surfactants and solvents that combined spreading over and softening of the waxy leaf cuticle to facilitate penetration of highly hydrophilic active ingredients such as micronutrients, herbicides, and antibiotics.

Flotek Chemistry LLC Houston, TX
Formulation Development Manager November 2011 to April 2020

Owned product development output and drove R&D performance across 10-person Formulation Development (FormDev) Group. Propelled research, testing, and commercialization of oil/gas and agriculture products that utilized solvents and surfactants. Partnered with cross functional teams (legal, go-to-market, etc.) to manage/expand product portfolio. Led product innovation stage-gate process from planning, viability assessment, and raw material validation to scale up and intellectual property (IP) patenting. Enhanced data reporting and presentation. Reviewed business and manufacturing directives and aligned/prioritized project portfolio to address needs and requirements. Administered \$2M group budget and managed capital, lab, and travel expenses. Trained and mentored Research Scientists. Developed 40 new products over tenure with 30 realizing full commercialization. Revised and reformulated an additional 40 products to improve manufacturability, reduce production cost, and adapt to customers' evolving needs. Grew patent portfolio from 6 to 93 in 7-years to protect all aspects of company's newly developed well-treatment technology. Diversified patent protection to include wide range of bio-derived and mineral spirit solvents as well as diverse surfactants. Built a FormDev Group that was renowned for expertise in microemulsion phase behavior and efficient formulation of new kinds of CnF® products. Established a culture of scientific excellence in all areas relevant to product performance. Amplified efficacy of statistical analysis by implementing data evaluation best practices. Demonstrated that CnF® product performance (to enhance well productivity in certain wells) is due to solvent mobilizing asphaltenic residues to increase near wellbore permeability. Developed demo to show this to potential customers.

E Ink Corp Cambridge, MA
Pigment Group Leader and Principal Scientist August 2008 to November 2011
Oversaw a lab and projects dedicated to facilitating the science behind electrophoretic ink displays (specifically development of polymer pigment surface treatments with controlled grafting density, molecular weight, and chemical composition). Expanded

pigment team from 3 to 10 scientists by selecting and hiring leading chemists, including polymerization specialists. Collaborated with Product Development and Physics Groups to advance development efforts. Served as member of Vice President's leadership team. Achieved precise and quantitative control of electrophoretic pigment particle charge by means of control of polymer grafting density, MW, and fluoro composition.

Demonstration that switching (from black to white to black) progressed from none to strong and back to none as the system progressed from nearly neutral particles to highly charged.

Successfully demonstrated that black fines from the black pigment were contaminating the white pigment and limiting the achievable white state of the display.

Completed preparation of well-defined silica coated core-shell titania nanoparticles to improve white state of the display.

Accomplished demonstration of making black ink particles with extremely high extinction coefficient lacking the presence of fines and potentially eliminating the contamination problem.

Proposed model for the charge mechanism of electrophoretic pigment particles with fluoro-polymer shell that was consistent with lab results.

Dow Silicones Corporation (Formerly Dow Corning Corporation) Midland, MI
MIT Visiting Scientist September 2003 to April 2008

Leveraged expertise with self-assembly to support work conducted by the Institute for Soldier Nanotechnology (ISN), a joint venture between MIT, Dow Corning, and the U.S. Army. Contributed extensively to projects surrounding block copolymers and development of superhydrophobic silicone nanofibers. Identified emerging innovations in nanotechnology that aligned with Dow's business interests and courted partnerships with 9 professors behind said innovations. Obtained funding to progress work on prototypes.

Invented surface functionalized superhydrophobic silicone nanofibers, in collaboration with Professors Rutledge and Hammond at MIT ISN, resulting in a Langmuir paper (cited 558 times since publication in 2005), and 2 patents.

Successfully acquired 3 years of U.S. Army funding to further the evolution of nanofiber membranes used in breathable protective textiles, resulting in first-stage integration of components into a prototype, 3 patent applications, and several journal articles.

Spearheaded global incubator project on self-assembling nanostructured silicone materials for photonic applications that led to a patent application and an Army grant to support joint work with MIT and the University of Ioannina in Greece.

Developed techniques to synthesize very high MW silicone block copolymers and characterize self-assembly to form materials with a visible wavelength photonic bandgap.

Associate Research Scientist June 1998 to September 2003

Collaborated with product development teams to further develop silicone surfactant and silicone microemulsion technologies for personal and household care applications resulting in a new low viscosity transparent gel for a major customer, formulation of silicone vesicles into personal care products, and multiple patents issued.

Lead a Joint Development project with a Silicon Valley startup to develop a transparent nanocomposite silicone material with a refractive index >1.55 , resulting in one patent application.

Lead a joint project with Stanford University that substantially broadened the formulation space of transparent personal care products based on silicone copolymers and generated new understanding of gel formation.

Senior Research Specialist
Research Specialist

February 1988 to June 1998

Co-authored and published a book entitled "Silicone Surfactants."

Initiated a 5-year collaboration with the University of Minnesota that generated new scientific understanding of silicone surfactants that laid the foundation for many new patented product technologies that have become New Product – New Market Sales. Developed new antifoam technology leading to a new product launch with a major household care products customer.

Horizon Chemical Co.

Decatur, IL

Senior Research Chemist

September 1986 to February 1988

Developed understanding of the physical chemistry and applications of alkyl polyglycoside surfactants and their application in laundry and dish detergents. Provided fundamental understanding and interacted extensively with customers to facilitate rapid application development of these materials.

Lever Research Inc.

Edgewater, NJ

Principal Research Chemist

November 1982 to September 1986

Assigned to Unilever Research, Vlaardingen, The Netherlands June 1984 to June 1985 to learn automatic dishwashing detergent formulation.

Developed new automatic dishwashing detergent formulations based on enzymes.

Developed new laundry detergent formulations based on mixed surfactant systems and enzymes.

Key Contact for transfer of enzyme technology from the Enzyme Expertise Center, Unilever Research (Netherlands) to Lever Research US.

Education

Ph.D., Physical Chemistry – University of Oklahoma (Norman, OK), 1982

B.S., Physics – Southern Nazarene University (Bethany, OK), 1976

Academic Roles

Adjunct Professor – University of Minnesota, 1993-1995

Adjunct Professor – Wayne State University, 2000-2005

Visiting Scholar – Stanford University, 2000-2003

Visiting Scientist – Massachusetts Institute of Technology (MIT), 2003-2010

Honors and Awards

Dow Corning Technical Achievement Award, "Silicone Microemulsions for Antiperspirants", 2001

Dow Corning Technical Achievement Award, "New Personal Care Applications of Siloxane Surfactants", 1995

Dow Corning Technical Achievement Award, "Foam Control Technologies", 1990

AOCS Samuel Rosen Award for Surfactant Chemistry, 2017.

Invited Lectures and Symposia Organized

Hill, R.M. "Surfactant Enhanced Spreading", Gordon Research Conference, "Chemistry at Interfaces", July, 1998.

Hill, R.M., "The Dynamics of Surfactant Enhanced Spreading", ACS National Meeting, Dallas, TX, March, 1998.

Hill, R.M., "The Dynamics of Surfactant Enhanced Spreading", PRA, Orlando, FL March 1998.

Hill, R.M.; Stoebe, T.; Davis, H.T., "Wetting by mixtures of siloxane and hydrocarbon surfactant", Workshop on Spreading, Gien, France, May 2000.

Member of the international organizing committee, Industrial-Academic Workshop on Spreading, Giens, France, May, 2000.

Co-organized with Prof. Darsh Wasan (IIT) a two day symposium on surfactant spreading at the Fall National ACS Meeting, Boston, August, 1998.

Publications and Patents

View Publications including citation statistics via Google Scholar (unfortunately, this is not complete) at:

<https://scholar.google.com/citations?user=iUKgILkAAAAJ&hl=en&oi=ao>

Patents

69 issued patents, including US patents and selected international patents on material not fully covered in US.

69. Stephen J. Telfer, Randal M. Hill, et al., US11733580, Method for driving two layer variable transmission display, to E Ink, issued 8/2/23.
68. Glenn S. Penny, Keith Ingram Dismuke, Richard Nelson Fox, Andrei Zelenev, Randal M. Hill, US11634625B2, Siloxane surfactant additives for oil and gas applications, issued 4/25/2023, to Flotek Chemistry.
67. Siwar Trabelsi, Randal M. Hill, US11560351. Methods and compositions incorporating alkyl polyglycoside surfactant for use in oil and/or gas wells, issued 1/24/2023, to Flotek Chemistry.
66. Trabelsi, Siwar, Hill, Randal M., US11512243B2, Microemulsions Comprising An Alkyl Propoxylated Sulfate Surfactant, And Related Methods, to Flotek Chemistry, issued 11/29/2022.
65. Paolini Jr, Richard J., Hill, R.M., US11467466, Illumination systems for reflective displays, issued 10/12/2022, to E Ink Corporation.
64. Hill, R.M., Champagne, L.M., Lett, N.L., Dismuke, Keith I., Germack, D., Soeung, M., and Mast, N., Methods and compositions for use in oil and/or gas wells, US11254856B2, issued 2/22/2022, to Flotek Chemistry.
63. Forbes, Natalie, James Silas, and Randal M. Hill, Diluted microemulsions with low surface tensions." US11180690, issued 11/11/2021, to Flotek Chemistry.
62. Penny, G.S., Dismuke, K.I., Fox, R.N., Zelenev, A., and Hill, R.M., Siloxane surfactant additives for oil and gas applications, US11149189, issued 10/19/2021, to Flotek Chemistry.
61. Hill, Randal M., Paul Ashcraft, Angus Fursdon-Welsh, Lakia M. Champagne, and Natalie Forbes, US11053433B2, Methods and compositions for stimulating the production of hydrocarbons from subterranean formations, issued 7/6/2021, to Flotek Chemistry.
60. Lakia M. Champagne, Angus Fursdon-Welsh, Randal M. Hill, US11034879B2, Methods and compositions for use in oil and/or gas wells, issued 6/15/2021, to Flotek Chemistry.
59. Stephen J. Telfer, Richard J. Paolini, Jr., Sunil Krishna Sainis, Randal M. Hill, Isaac W. Moran, Lee Yezek, Alain Bouchard, William Vetterling, George G. Harris, Hywel Morgan, Luke Slominski, Jay William Anseth. Jennifer M. Morrison, Craig A. Herb, US11029576B2, Method for driving two layer variable transmission display, to E Ink Corp., issued 6/8/2021.
58. Trabelsi, Siwar, and Randal M. Hill. "Methods and compositions incorporating alkyl polyglycoside surfactant for use in oil and/or gas wells. US10941106, issued 3/9/2021, to Flotek Chemistry.

57. Hill, R.M., Champagne, L.M., Lett, N.L., Dismuke, K.I., Germack, D., Mast, N., and Soeung, M., US10738235B2, Methods and compositions for stimulating the production of hydrocarbons from subterranean formations, issued 8/11/2020, to Flotek Chemistry.
56. Saboowala, H., Hill, R.M., Fursdon-Welsh, A., US10731071B2, Methods and compositions for use in oil and/or gas wells comprising microemulsions with terpene, silicone solvent, and surfactant, to Flotek Chemistry, issued 8/4/2020.
55. Hill, R.M., Champagne, L.M., Lett, N.L., Dismuke, Keith I., Germack, D., Soeung, M., and Mast, N., US10703960B2, Methods and compositions for use in oil and/or gas wells, issued 7/7/2020.
54. Dismuke, K.I., Philpot, D., Hill, R.M., Pennypacker, R., Hill, S., and T.R. Sifferman, US10696887B2, Oxidative breakers in a silicone based suspension, to Flotek Chemistry, issued 6/30/2020.
53. Penny, G.S., Dismuke, K.I., Fox, R.N., Zelenev, A., and Hill, R.M., US10590332B2, Siloxane surfactant additives for oil and gas applications, to Flotek Chemistry, issued 3/17/2020.
52. Hill, R.M., Champagne, L.M., Lett, N.L., Green, M.E., and Saboowala, H., US10544355B2, Methods and compositions for stimulating the production of hydrocarbons from subterranean formations using emulsions comprising terpene, to Flotek Chemistry, issued 1/28/2020.
51. Dismuke, K., Philpot, D., Hill, R.M., Pennypacker, R., Hill, S., and Sifferman, T., CA2906097C, Oxidative breakers in a silicone based suspension., to Flotek Chemistry, issued 12/3/2019.
50. Hill, R.M., Soeung, M., and Gonzalez-Roldan, M., CA2904735C, Methods and compositions for use in oil and/or gas wells, to Flotek Chemistry, issued 11/26/2019.
49. Hill, R.M., Champagne, L.M., Lett, N.L., Green, M.E., and Saboowala, H., Flotek Chemistry LLC, 2019. Methods and compositions for stimulating the production of hydrocarbons from subterranean formations. CA2906047C.
48. Saboowala, H., Hill, R.M., and Fursdon-Welsh, A., Flotek Chemistry LLC, 2019. Method and composition for oil well and/or gas well. CN105971571B.
47. Trabelsi, Siwar, and Hill, R.M., US10421707, Methods and compositions incorporating alkyl polyglycoside surfactant for use in oil and/or gas wells., 9/24/2019, to Flotek Chemistry LLC.
46. Hill, R.M., Champagne, L.M., et al., AU2017261565B2, Methods and compositions for stimulating the production of hydrocarbons from subterranean formations, 9/12/2019, to Flotek Chemistry LLC.
45. Michael A. Bryan, Hill, R.M., et al., Methods and compositions for use in oil and/or gas wells, AU2018201361B2, 5/16/2019, to Flotek Chemistry LLC.
44. Saboowala, H., Hill, R.M., Paul Ashcraft, Soeung, M., CN106837217B, For oil well and/or the composition and method comprising terpenol of gas well, 7/2/2019, to Flotek Chemistry LLC.
43. Saboowala, Hasnain, Hill, R.M., Paul Ashcraft, and Soeung, M.. US10287483, Methods and compositions for use in oil and/or gas wells comprising a terpene alcohol, 5/14/2019, to Flotek Chemistry LLC.
42. Saboowala, H., Hill, R.M., CA2904736C, Siloxane surfactant additives for oil and gas applications, 4/23/2019, to Flotek Chemistry LLC.

41. Randal Hill, Lokia Champagne, Nathan Lett, Maria E. Green, Saboowala, H., CN104755582B, Method for stimulating and composition for producing hydrocarbons from subsurface formations, 4/12/2019, to Flotek Chemistry LLC.
40. Randal Hill, Soeung, M., Monica Gonzalez-Roldan, CN105419750B, Method and composition for oil well and/or gas well, 3/22/2019, to Flotek Chemistry LLC.
39. Saboowala, H., Hill, R.M., Fursdon-Welsh, A., EP3067404A1, Methods and compositions for use in oil and/or gas wells, 3/6/2019, to Flotek Chemistry LLC.
38. Saboowala, H., Hill, R.M., Ashcraft, P.A., Soeung, M., AU2015227467B2, Terpene alcohol microemulsion additives, 2/21/2019, Flotek Chemistry.
37. Saboowala, H., Hill, R.M., Fursdon-Welsh, A., AU2015227471B2, Silicone solvent microemulsions for crude oil demulsification, 2/21/2019, Flotek Chemistry.
36. Hill, R.M., Soeung, M., Gonzalez-Roldan, M., AU2015227391B2, Silicone solvent microemulsion additives, 2/14/2019, Flotek Chemistry.
35. Hill, R.M., Champagne, L.C., et al., US10196557, Hydrocarbon solvent microemulsion additives, 2/5/2019, Flotek Chemistry.
34. Hill, R.M., Germack, D., Soeung, M., Holcomb, D.L., CA2897548C, Hydrophobic nanoparticle microemulsion additives, 10/30/2018, Flotek Chemistry.
33. Hill, R.M., Champagne, L.C., Lett, N.L., Green, M.E., Saboowala, H., US10087361, Terpene solvent microemulsion additives, 10/2/2018, Flotek Chemistry.
32. Saboowala, H., Hill, R.M., US10053619, Siloxane surfactant additives for oil and gas applications, 8/21/2018, Flotek Chemistry.
31. Hill, R.M., Soeung, M., Smith-Gonzalez, M, US10000693, Silicone solvent microemulsions, 6/19/2018, Flotek Chemistry.
30. Telfer, S.J., Hill, R.M., et al., US9989829, Multi-color electro-optic displays, 6/5/2018, E Ink Corporation.
29. Hill, R.M., Champagne, L.C., Lett, N.L., Green, M.E., Saboowala, H., US9994762, Terpene microemulsions for oil and gas applications, 6/12/2018, Flotek Chemistry.
28. Penny, G.S., Dismuke, K., Fox, R., Zelenev, A., Hill, R.M., CA2842208C, Siloxane surfactant additives for oil and gas applications, 5/1/2018, Flotek Chemistry.
27. Hill, R.M., et al., CN ZL201480002623.0, Alpha-olefin microemulsions for oil and gas applications, 4/24/2018, Flotek Chemistry.
26. Champagne, L.C., Hill, R.M., et al., AU2014236272B2, Amine solvent microemulsion additives for oil and gas applications, 3/15/2018.
25. Dismuke, K.I., Hill, R.M., et al., US9884988, Stimulation fluid utilized in offshore wells, 2/6/2018, Flotek Chemistry.
24. Saboowala, H., Hill, R.M., Fursdon-Welsh, A., US9868893, Silicone solvent microemulsions for crude oil demulsification, 1/16/2018, Flotek Chemistry.
23. Hill, R.M., Champagne, L.C., Lett, N.L., Dismuke, K.I., Germack, D., Mast, N., Soeung, M., AU2014278002B2, Hydrocarbon solvent microemulsions for oil and gas applications, 11/30/2017, Flotek Chemistry.
22. Hill, R.M., Champagne, L.C., Lett, N.L., Green, M.E., Saboowala, H., AU2014236331B2, Terpene microemulsion additives for oil and gas applications, 12/18/2017, Flotek Chemistry.
21. Hill, R.M., Champagne, L.C., Lett, N.L., Green, M.E., Saboowala, H., US9809741, Methods and compositions for stimulating the production of hydrocarbons from subterranean formations, 2017, Flotek Chemistry.

20. Hill, R.M., Champagne, L.C., Lett, N.L., Green, M.E., Saboowala, H., US9428683, Methods and compositions for stimulating the production of hydrocarbons from subterranean formations, 2016, Flotek Chemistry.
19. Hill, R.M.; Champagne, L.M.; Lett, N.L.; Dismuke, K.I.; Germack, D.; Mast, N.; Soeung, M., US9321955, Methods and compositions for stimulating the production of hydrocarbons from subterranean formations, to Flotek Chemistr, issued , 4/26/2016.
18. Telfer, S.J.; Hill, R.M.; et al., US9341916, Multi-color electro-optic displays, to E Ink Corporation, issued 5/17/2016.
17. Hill, R.M.; Champagne, L.M.; Lett, N.L.; Green, M.E., US9068108, to CESI Chemical, issued 6/30/2015.
16. Lee J.A., Krogman K.C., Hill R.M., Rutledge G.C., Hammond P.T., US8906814B2, to MIT, issued 12/9/2014.
15. Rutledge, G. C., Hill, R. M., Lowery, J. L., Ma, M. and S. Fridrikh, Superhydrophobic fibers and methods of preparation and use thereof, US8574713B2, to MIT, issued 11/5/2013.
14. Telfer, S.J.; Hill, R.M.; et al., US8576476, Multi-color electro-optic displays, to E Ink Corporation, issued 11/5/2013.
13. Feng, Q.J., Z. Lin and R.M. Hill, Clear silicone microemulsions formed spontaneously, US6998424, to Dow Corning Corp, issued , 2/14/2006.
12. Hill, R.M. and Z. Lin, Clear silicone microemulsions, US6616934, 2003, Dow Corning Corp.
11. Bialek, A.I., R.M. Hill, D.A. Kadlec, and H.M. Vandort, Temperature Insensitive One-Phase Microemulsions, US6498197, 2002, Dow Corning Corp.
10. Halloran, D.J., R.M. Hill, B.M. Wrolson, and B.L. Zimmerman, Polymerization of silicone microemulsions, US6479583, 2002, Dow Corning Corp.
9. Hill, R.M.; Kaler, E.W.; Ryan, L.D.; Silas, J.A., Single phase silicone and water compositions for cosmetics, US6013683, to Dow Corning Corp. and University of Delaware, issued 1/11/2000.
8. Ekeland, R.A., Hill, R.M., Siloxane MQ resin vesicles for entrapment of water-soluble substances, US5958448, to Dow Corning Corp., issued 9/28/1999.
7. Hill, R.M., US5707613, Spontaneously formed clear silicone microemulsions, to Dow Corning Corp., issued 1/13/1998.
6. Hill, R.M., US5705562, Spontaneously formed clear silicone microemulsions, to Dow Corning Corp., issued 1/6/1998.
5. Hill, R.M., Clear silicone gels, US5623017, to Dow Corning Corp., issued 4/22/1997.
4. Hill, R.M. and S.A. Snow, Silicone vesicles and entrapment, US5411744, to Dow Corning Corp., issued 5/2/1995.
3. Hill, R.M. and S.A. Snow, Siloxane surfactant vesicles for entrapment of cosmetics and pharmaceuticals, US5364633, to Dow Corning Corp., 11/15/1994.
2. Hill, R.M., M.S. Starch, and M.S. Gaul, Emulsion gelled silicone antifoams, US5262088, to Dow Corning Corp., issued 11/16/1993.
1. Hill, R.M. and S.A. Snow, Cationic diquaternary ammonium salt containing functional silicones, US5235082, to Dow Corning Corp., issued 8/10/1993.

60 publications including editing/authoring a book entitled "Silicone Surfactants".

60. Lin, Yu-Jiun, Alyssa Perrard, Sibani Lisa Biswal, Randal M. Hill, and Siwar Trabelsi. "Microfluidic investigation of asphaltenes-stabilized water-in-oil emulsions." *Energy & Fuels* 32, no. 4 (2018): 4903-4910.

59. Swanson, C., Hill, W.A., Nilson, G., Griman, C., Hill, R., Sullivan, P., Aften, C., Jimenez, J.C., Pietrangeli, G., Shedd, D.C. and Pursley, J., 2018, September. Post-Frac-Hit Mitigation and Well Remediation of Woodford Horizontal Wells With Solvent/Surfactant Chemistry Blend. In *Unconventional Resources Technology Conference*, Houston, Texas, 23-25 July 2018 (pp. 1479-1494). Society of Exploration Geophysicists, American Association of Petroleum Geologists, Society of Petroleum Engineers.

58. Lin Y.J., Perrard A., Biswal S.L., Hill R.M., Trabelsi S., Microfluidic Investigation of Asphaltenes-Stabilized Water-in-Oil Emulsions. *Energy & Fuels*. 32(2018)4903-10.

57. Hill, R.M., Trabelsi, S., Pietrangeli, G., "Silicone dispersions in Oil and Gas," in Liu, Y. (Ed.). (2017). *Silicone Dispersions*. Boca Raton: CRC Press, <https://doi.org/10.1201/9781315371177>.

56. Ma, M.; Hill, R.M.; G.C. Rutledge, A Review of Recent Results on Superhydrophobic Materials Based on Micro- and Nanofibers, *J. Adhesion Sci. Technol.* 2008, 22, p. 1799-1817. Also published in *Superhydrophobic Surfaces*, edited by A. Carre' and K.L. Mittal, CRC Press, 2009, page 241.

55. Ma, M.; Hill, R.M., *Superhydrophobic Surfaces*, *Curr. Op. Colloid Interface Sci.* 2006, 11, p. 193-202. This article has been cited 1558 times since publication (as of 2/2023).

54. Jung Ah Lee; Kevin C. Krogman; Minglin Ma; Hill, R.M.; Paula T. Hammond; Gregory C. Rutledge, Highly reactive multilayer-assembled TiO₂ coating on electrospun polymer nanofibers, *Adv. Mat.* 2009, 21, p. 1252-1256.

53. Politakos, N., Ntoukas, E., Avgeropoulos, A., Krikorian, V., Pate, B.D., Thomas, E.L. and Hill, R.M., 2009. Strongly segregated cubic microdomain morphology consistent with the double gyroid phase in high molecular weight diblock copolymers of polystyrene and poly (dimethylsiloxane). *Journal of Polymer Science Part B: Polymer Physics*, 47(23), pp.2419-2427.

52. Hill, R.M., *Silicone Surfactants*, in *Chemistry and Technology of Surfactants*, edited by R.J. Farn, Blackwell Publishing, Oxford, UK, 2006, p. 186.

51. Ma M., Hill R.M., Lowery J.L., Fridrikh S.V., and G.C. Rutledge, Electrospun poly(styreneblock-dimethylsiloxane) block copolymer fibers exhibiting superhydrophobicity, *Langmuir* 2005, 21, p. 5549-5554. This article was on the ACS Hot Papers list in 2007 and has been cited 622 times since publication (as of 2/2023).

50. Lee, J.Y., A.C. Balazs, R.B. Thompson, and R.M. Hill, Self-Assembly of Amphiphilic Nanoparticle-Coil "Tadpole" Macromolecules, 2004, 37, p. 3536-3539.

49. Dong, J.P., G.Z. Mao, and R.M. Hill, Nanoscale aggregate structures of trisiloxane surfactants at the solid-liquid interface, *Langmuir*, 2004, 20, p. 2695-2700.

48. Anseth, J.W., A. Bialek, R.M. Hill, and G.G. Fuller, Interfacial rheology of graft-type polymeric siloxane surfactants, *Langmuir*, 2003, 19, p. 6349-6356.

47. Dong, J., G. Mao, and R.M. Hill, Atomic force microscopy study of trisiloxane surfactant aggregate structures at the solid-liquid interface. ACS Symposium Series, 2003, 861(Mesoscale Phenomena in Fluid Systems), p. 2-16.
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44. Hill, R.M., G.G. Fuller, and J. Anseth, Phase behavior of silicone copolymers swollen with water and oil. Abstracts of Papers, 224th ACS National Meeting, Boston, MA, United States, August 18-22, 2002, p. COLL-289.
43. Hill, R.M., Silicone (Siloxane) Surfactants. Encyclopedia of Physical Science and Technology, 3rd Edition, Robert A. Meyers, Editor, Volume 14, 2002, p. 793.
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