

Robert L. “Bob” Horton

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Experience Summary

Currently retired technical leader with a strong customer focus and broad experience in delivering advanced technology products and state-of-the-art technical services to operating groups in the petroleum industry.

Professional Experience:

Home Run Specialty Chemicals, Inc. (HRSC): **June 26, 2013 – Jan. 15, 2018**

Chief Technology Officer & Technical Vice President

- *Co-founded HRSC with Mr. W. M. Ranshaw in 2009*
- *Am developing the HRSC specialty additives product lines for drilling, completion, stimulation, and production, including emulsifiers, non-emulsifiers, and EB's.*
- *HRSC is currently attempting to market my latest provisional patent applications in the areas of flow assurance / recovery of fresh water from brackish and sea waters in desert areas.*

WellChem Technologies (formerly Corsicana Technologies): **Apr. 11, 2013 – June 26, 2013**

Patent & External Technologies Manager

Corsicana Technologies, Inc. (formerly Champion Technologies, Special Products Div.):

Group Leader III

Jan. 1, 2011 – Apr. 10, 2013

- *Led a small research team in developing new specialty additives for wellbore construction – drilling, displacement, completion, work-over, well testing, etc. Expanded product line from 14 products to 49. Participated in the first-time sales of several new products.*

Special Products Division of Champion Technologies, Inc.:

2009 – 2011

Technical Marketing Advisor

- *Served as liaison between operating groups in the petroleum industry and Champion Technologies R&D. Proved to management that R&D was focusing almost entirely on very short-term projects, only a very little on medium-term, and not at all on longer-term.*

M-I SWACO : 1999 - 2009

Senior R&D Advisor

- *Led a small research team in developing new RDF and completion fluids products. Much of this work is confidential and cannot be detailed at this time. Co-developed and published “THIOCYANARA”, a group of brine reclamation products for preventing stress corrosion cracking in high strength CRA's by eliminating thiocyanates and oxidizers from reclaimed completion brines. Developed a new, non-biopolymer-based RDF, DIPRO, covering the 11.5 to 17.5 ppg density range. Developed and patented the general solution to the problem of how to stabilize viscoelastic surfactant systems in 8.4 to 13.5 ppg brines at temperatures beyond 300°F.*

OSCA : 1995 – 1999

Technical Services Manager

- *In support of OSCA's dynamic GoM boat-based frac-packing venture, co-invented, developed, and commercialized a key new product, VISCOFLEX, a non-polymer viscoelastic vesicular emulsion-based system which has stability to 300°F, very low leak-off through micellar bridging, and excellent proppant pack clean-up (100% regained conductivity). Increased the Technical Services Department's annual production of new products from 1 to 16. Justified, recruited and hired personnel, expanding Technical Services from four exempt and one non-exempt to six exempt, six non-exempt.*

Texaco : 1990 – 1995

Senior Research Associate

- *Developed a neural-network-based objective rapid surfactant screening process for CO₂-foams. The screening process cuts surfactant evaluation effort by at least 50%, saving annually \$ 200,000. Collaborated with Professor S. O. Colgate (U. of Florida) in organizing an oil industry consortium to pursue acoustic resonance research. Together developed an acoustic PVT apparatus which can be operated safely beyond 100,000 psi.*

OXY USA : 1985 – 1990

EOR Supervisor

- *Led technical support team for chemical, miscible, and thermal EOR field projects.*
 - *Through the team's efforts, augmented one field's value to OXY by reducing net present cost of CO₂ by \$ 27,000,000.*
 - *CO₂/Foam Technology Transfer:*
 - *Developed oil- and brine-tolerant foaming agents capable of propagating deep through hot, low-pH, sandstone reservoirs;*
 - *Convinced a Unit Production Manager that successful field trials to improve CO₂ sweep efficiency were likely;*
 - *Persuaded vendors to provide chemicals worth \$60,000;*
 - *Collaborated with Unit Engineering on candidate pattern selection;*
 - *Led the on-site work at three patterns in the Unit; and*
 - *Drove & supervised a portable laboratory, providing data-logging, and chemical and data analyses.*

BP America (Formerly Sohio Petroleum) : 1982 – 1985

Group Leader II, Miscible Flooding and Fluid Properties

- *Created, staffed, and supervised a group of eleven advanced-degreed engineers, physicists, and chemists – experimentalists and theoreticians – working in miscible flood EOR and reservoir fluid properties. These eleven included eight with Ph.D.'s and three with Master's and extensive experience. Initiated physical pseudo-component VLE analysis through head-space gas chromatography.*

Phillips Petroleum : 1975 – 1982

Senior Research Chemist

- *Reduced leach chemical costs from \$3/T to \$2/T, saving annually \$ 900,000. To do this, faced the challenge of a particularly refractory uranium ore and a logical, authoritative, published, and peer-reviewed theory explaining why the ore was so refractory. Carried out definitive experiments which disproved the published theory and led to a successful alternative approach.*

Louisiana State University : 1971 – 1975

Assistant Professor of Chemistry and Physics

- *While teaching lower division courses in Chemistry and Physics, conceived and drafted a grant proposal for a Computer Science program. Successfully lobbied proposal through the LSU Foundation. Taught the course, which became the third most demanded course on campus and eventually grew into a complete bachelor's degree program.*

Concurrent Positions

Rice University : 1973 – 1975

Post-doctoral Fellow in Chemistry

- *Researched ion-molecule reactions and gaseous ionic equilibria in CO, NO, and NO₂.*

Research

- Flow assurance
- Recovery of fresh water from hydraulic fracturing flow-back brines, seawater, recyclable “gray” waters on extended space flights
- Completion fluid product development
- Reservoir drilling fluid product development
- Formate brine physical and thermophysical properties
- Enhanced oil recovery
- Miscible- and CO₂-flooding school instructor
- Alternative fuels
- Uranium extraction and refining
- Aqueous ionic / polyelectrolytic equilibria
- Reactions of non-aqueous polyelectrolytes
- Thermo-physical properties of mixtures
- Phase equilibria
- Gaseous ionic kinetics and equilibria
- Ion-molecule reactions
- Ion-molecule reaction mechanisms and reaction kinetics

Memberships

- Society of Petroleum Engineers (SPE)
- American Association of Drilling and Completion Engineers (AADE)
- NACE International
- Sigma Xi (Research Society of North America) (ΣΞ)
- American Chemical Society (ACS)
- Rice Alumni Volunteers for Admissions to Rice University (RAVA)
- Gas Processors Association (GPA)
- GPA Phase Equilibrium Steering Committee
- Canadian Institute of Mining (CIM)
- Society of Mining Engineers (SME)

Patents and Other Publications

- Seventy-eight in number; please see the addendum, "Patents and Other Publications".

Education

- Post-doctoral training under Chemistry Professor & Chair, J. L. Franklin, Rice University.
- University California Berkeley, Ph.D. (chemistry)
- Rice University, BA *cum laude*

Robert L. "Bob" HORTON
PATENTS and PUBLICATIONS

78. Horton, R. L., and Colgate, Sam O., WIPO Patent Application to be published in about 18 months.
77. Faugerstrom, Lee, Horton, R. L., Luyster, Mark, Shepherd, Chris, Prasek, Bethicia B., and LePage, James, "Chelate Compositions and Methods and Fluids for Use in Oilfield Operations," WIPO Patent Application WO2012116032, Filing Date: Feb. 22, 2012, Publication Date: Aug. 30, 2012.
76. Horton, R. L., and Prasek, Bethicia B., "Particulate Bridging Agents Used for Forming and Breaking Filtercakes in Wellbores," PCT/US2009/064080 and WIPO Patent Application WO/2010/056779, Filing Date: Nov. 12, 2009, Publication Date: May 20, 2010.
75. Horton, R. L., and Prasek, Bethicia B., "Method and Composition for Determining Hardness in Wellbore Fluid Filtrate," PCT/US2009/057706, and WIPO Patent Application WO/2010/036620, Filing Date: Sept. 21, 2009, Publication Date: Apr. 1, 2010.
74. Horton, R. L., and Growcock, Frederick B., "Producing Gaseous Hydrocarbons from Hydrate Capped Reservoirs", PCT/US2009/047472, WIPO Patent Application WO/2009/155270, and US Patent 8,899,340, Filing Date: June 16, 2009, Publication Date: Dec. 02, 2014.
73. Horton, R. L., Darring, Michael T., and Molina, Hiram, "Methods for Preventing or Remediating Xanthan Deposition," US Provisional Patent Application 61/021554, PCT/US2009/030378 and WIPO Patent Application WO/2009/091652, Filing Date: Jan. 14, 2008, Publication Date: Jan. 08, 2009.
72. Horton, R. L., Zhang, Hui, and Arvie, Jr., Morris A. "Reclamation of Halide-Contaminated Formate Brines," PCT/US2008/071469, WIPO Patent Application WO/2009/018273, and US Patent 8,871,097, Filing Date: July 24, 2008, Publication Date: Oct. 28, 2014.
71. Zhang, Hui, Horton, R. L., Svoboda, Charles, and Evans, Frank E., "Reclamation of Formate Brines," PCT/US2008/071053, WIPO Patent Application WO/2009/018099, European Patent Application EP2181072, Published, and US Patent Application 20100204511, Filing Date: Jul. 29, 2008, Publication Date: Aug. 12, 2010.
70. Horton, R. L., Massam, Jarrod, and, Oakley, Doug, "Insulating Annular Fluid," PCT/US2008/071046, WIPO Patent Application WO/2009/023415, and European Patent Application EP2188346, Filing Date: July 24, 2008, Publication Date: May 26, 2010.
69. Navarro, Raul, Jones, Andrew G. K., Luyster, Mark, and Horton, R. L., "Gravel-Packing Carrier Fluid with Internal Breaker," PCT/US2008/068629, WIPO Patent Application WO/2009/006326, European Patent Application EP2176515, Published US Patent Application 20100212896, and US Patent 8,869,893, Filing Date: June 27, 2008, Publication Date Oct. 28, 2014.

68. Horton, R. L., and Prasek, Bethicia B., "Methods and Compositions for Preventing High Density Well Completion Fluid Loss," PCT/US2008/068885, WO/2009/009343, European Patent Application EP2179129, and Published US Patent Application 20100210486, Filing Date: 07/01/2008, Publication Date: 08/19/2010.
67. Horton, R. L., Stoker, Randy, and Davis, Paul, "Process for Preventing or Remediating Trithiazine Deposition in High H₂S Wells", Patent Applications PCT/US2008/059043, WIPO Patent Application WO/2008/124404A1, European Patent Application EP2155363, and Published US Patent Application 20100163255, Filing Date: Apr. 1, 2008, Publication Date: Jul. 1, 2010.
66. Freeman, Michael, A., Horton, R. L., Conn, Lee, Vian, John, W., and Arvie, Morris, Jr., "Method and Pill for Remediating Hydrate Condensate Blockage in Pipelines," Published US Patent Application US2008/051200 and WIPO Patent Application WO/2008/089262, Filing Date: January 16, 2008, Publication Date: July 24, 2008.
65. Wasson, L. Jim, Farpon, Alfredo, DeLoach, John E., Alexander, Julian A., and Horton, R. L., "Inexpensive Aqueous Tertiary Amine Solvents for Gas Treatment", Atty. Docket 05542-033027, Filing Date: May 13, 2009.
64. Horton, R. L., "Oil-based Hydraulic Fracturing Fluid Breaker and Nano-scale Oil-based Hydraulic Fracturing Fluid", Atty. Dockets 05542-033021 and '022, US Provisional Patent Application 61/214549, Published US Patent Application 20100252259, Filing Date: Mar. 31, 2010, Publication Date: Oct. 07, 2010, Published PCT/US Patent Application 2010029688, Filing Date: Apr. 01, 2010, Publication Date: Oct. 07, 2010, and WIPO Patent Application WO/2010/115042, Filing Date: Apr. 01, 2010, Publication Date: Oct. 07, 2010.
63. Horton, R. L., et al., "Marine Portable Tanks Comprising Inflatable Bladders", US Provisional Patent Application 61/211474, Atty. Docket 05542-033015, Filing Date: Mar. 28, 2009.
62. Horton, R. L., and Horton, Amy C., "Downhole Activated Filter Cake Breakers Utilizing Electromagnetic Radiation", Atty. Docket 05542-033011, US Provisional Patent Application 61/214222, Filing Date: Apr. 20, 2009, US Patent Application 12/764,082, Filing Date: Apr. 20, 2010, Publication Date: Oct. 21, 2010, PCT/US2010/031839, WIPO Patent Application WO/2010/123963, Filing Date: Apr. 21, 2010, Publication Date: Oct. 28, 2010.
61. Horton, R. L., "Miscible Stimulation and Flooding of Petroliferous Formations Utilizing Viscosified Oil-Based Fluids", US Provisional Patent Application 61/210615, Atty. Docket 05542-033007, Filing Date: Mar. 22, 2009, Published US Patent Application 20100236784, Filing Date: Mar. 22, 2010, Publication Date: Sept. 23, 2010.

60. Colgate, Sam O. and Horton, R. L., "Methods for Controlling Temperatures in the Environments of Gas and Oil Wells", US Provisional Patent Application 61/207464, Atty. Docket 05542-033002, Filing Date: Feb. 11, 2009, Publication Date: Aug. 12, 2010, PCT/US2010/024120 and WIPO Patent Application WO/2010/093938, Filing Date: Feb. 12, 2010, Publication Date: Aug. 19, 2010.
59. Zhang, Hui, Horton, R. L., Prasek, Bethicia B., and Dimataris, Mary L.K., "High Density Brines For Use In Wellbore Fluids", Published US Patent Application 20080135302, Filing Date: Dec. 14, 2005, Publication Date: June 12, 2008, US Patent 8,697,611, Filing Date: Dec. 14, 2005, Publication Date: Apr. 15, 2014.
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57. Freeman, Michael A., Prasek, Bethicia B., and Horton, R. L., "Diverting Compositions, Fluid Loss Control Pills, and Breakers Thereof", Published US Patent Application 20070213233, Filing Date: Mar. 8, 2007, Publication Date: September 13, 2007.
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55. Horton, R. L., Prasek, Bethicia B., Growcock, Frederick B., Kippie, David, Vian; John W., Abdur-Rahman, Kamila B., and Arvie, Morris A., Jr. "Surfactant-Polymer Compositions for Enhancing the Stability of Viscoelastic-Surfactant Based Fluid", Published US Patent Application 2004 0,063,587, Filing Date: April 1, 2004 and US Patent 7,157,409, Filing Date: July 15, 2003, Publication Date: January 2, 2007.
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51. Horton, R. L., Prasek, Bethicia B., "Fluid Loss Pills," Published US Patent Application 20100004145, Filing Date: Jun. 29, 2006, Publication Date: Jan 7, 2010, and US Patent

- 8,664,165, Filing Date: Jun. 29, 2006, Publication Date: Mar. 4, 2014.
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 49. Horton, R. L., Powell, John W., Foxenberg, William E., and Kippie; David, "Remediation Treatment of Sustained Casing Pressures (SCP) in Wells with Top Down Surface Injection of Fluids and Additives", Published US Patent Application 20040216882, Filing Date: Sept. 12, 2002, and US Patent 6,959,767, Filing Date: Sept. 12, 2003, Publication Date: November 1, 2005.
 48. Jones, Andrew G. K., Prasek, Bethicia B., and Horton, R. L., "Annular Fluids and Method of Emplacing the Same", US Patent 7,829,509, Filing Date: Mar. 01, 2005, Publication Date: Nov. 09, 2010, and US Patent 6,908,886, Filing Date: Jan. 9, 2003, Publication Date: June 21, 2005 and GB Patent 2,413,815, Priority Date: Jan. 9, 2003, Publication Date: Nov. 9, 2005.
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 46. Kippie, David P., Horton, R. L., and Foxenberg, William E., "High Density Thermally Stable Well Fluids," Published US Patent Application 20030032561, Filing Date: Dec. 6, 2001, and US Patent 6,746,992, Filing Date: Dec. 6, 2002, Publication Date: Jun. 8, 2004.
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 44. Foxenberg, William E., Darring, Michael T., Gobert, Kim J., Kippie, David P., and Horton, R. L., "Hydrate-Inhibiting Well Fluids," Published US Patent Application 20030220202, Filing Date: Apr. 10, 2003, Publication Date: Nov. 27, 2003.
 43. Vollmer, Daniel P., and Horton, R. L., "Wellbore Treatment and Completion Fluids and Methods of Using the Same", US Patent 6,632,779, Filing Date: Sept. 21, 2000, Publication Date: October 14, 2003.
 42. Vollmer, Daniel P., and Horton, R. L., "Methods for Enhancing Wellbore Treatment Fluids", US Patent 6,489,270, Filing Date: Jan. 7, 1999, Publication Date: December 3, 2002.
 41. Kippie, David P., Horton, R. L., Foxenberg, William E., and Arvie, Morris, Jr. "Chemical Fluid-Loss-Control Systems for Severe Environments: Taking Conventional Methods to a Higher Level." SPE 73771, SPE International Symposium on Formation Damage Control, Lafayette, Louisiana, Feb 20-21, 2002.
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 32. Vollmer, D. P., Javora, P. H., Horton, R. L., Chabaud, G. J., and Watts, W. P., "Avoid Elevated Plastic Viscosities in Drill-in Fluids", *Journal of Petroleum Technology*, 48(11), November 1996, pp. 1040-1041.
 31. Foxenberg, W. E., Javora, P. H., and Horton, R. L., "Advances In Clear Brine Completion Fluids Technology", III^{ro} Seminario de Fluidos de Perforacion y Terminacion de Pozos, Maturin, Venezuela, October 16-19, 1996.
 30. Vollmer, D. P., Javora, P. H., Horton, R. L., Chabaud, G. J., and Watts, W. P., "Tailoring Brine-based Drill-in Fluids for Horizontal Well Applications", presented at the 81 International Conf. on Horizontal Well Technology and Emerging Technologies, September 9-11, 1996, paper # 13.

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