Randal Hallford, Ph.D.

Academic Background

Oklahoma State University.
Ph.D. Chemistry, 2003
Pittsburg State University
M.S. Chemistry, 1993
East Central University
B.S. Chemistry, 1991
Major/Minor: Chemistry/Mathematics and Physics
Electronics Broadcast Engineering, 1975 FCC license, Element 9 endorsed Radiotelephony
Kiamichi Tech.
Endorsed Chaplin, 2019 Occupational Chaplin Association, Inc.

Professional Experience

Associate Professor Department of Chemistry, Midwestern State University, Wichita Falls, TX (2009 to present)
Interim Chair, Department of Chemistry, Physics and Geosciences, Midwestern State University, Wichita Falls, TX (2011-2014)
Assistant Professor, Department of Chemistry, Midwestern State University, Wichita Falls, TX; (2003 to 2009)
Post Doctoral Research Associate: Alan Apblett Laboratory: USAF program, Oklahoma State University. (2002-2003)
Lecturer, Department of Chemistry Oklahoma State University, Stillwater OK (1999-2002)
Lecturer, Department of Chemistry, Langston University, Langston OK . (2001)
Tenured Faculty in Physics/Chemistry, Cowley College, Ark City, KS.(1993 –1999)
Chemical Engineering, Southwestern Engineering Co., Oklahoma City, Ok. 1984-1985
Radio/Television Broadcasting Engineer- Channel 3, McAlester Oklahoma 1974-1976

Refereed Journal Publications

Hallford, Randal L. Entropy in Biochemical Failure (Conference paper). *Reports in Advances of Physical Sciences.* (6) 2022, 2240008. DOI 10.1142/S2424942422400084

Hallford, Randal L., Nemchen-Rueda, Ylelena, Sharma, Preet. Types of Potentials in Mitotic Spindles. *Biochemistry and Biophysics Reports*. (**27**) September 2021, 101076

Hunter Adams[a*], Mark Southard[b], Sam Reeder[a], Frances Buerkens[c], Randal Hallford[d], Keisuke Ikehata[e], Daniel Nix[f] Customer Complaints Eliminated: T&O Compound Detection and Mitigation in Surface and Drinking Waters. *J. AWWA* July/August 2021.

- Hallford, Randal L.,Sharma, Preet, Non-Hermitian Hamiltonian Treatment of Stark Effect in Quantum Mechanics. Emerg. Sci. J. **4** (6) 2020. 427-435. DOI 10.28991/esj-2020-01242
- Hallford, Randal L., Sharma, Preet, Smoot, Bailey, Capotosto, Salvatore, Utely, Nicholas, Olaya, Michael. The Non-Equilibrium Statistical Physics of Microbes. *J. Bioinfo.Proteom. Img. Anal.* **4** (1) 14-18. 2019.
- Hallford, Randal L., Capotosto, Salvatore. Smoot, Bailey, Sharma, Preet. Entropy Production, Entropy Generation and Fokker-Planck Equations for Cancer Cell Growth. *Physics*. (1) June 2019. DOI: 10.3390/physics1010014

- Hallford, R.L., Bennazha, J., El Maadi, A., El Omari, M., Boukhari, A. Synthesis Synthesis, Single Crystal Structure, and Ionic Conductivity of Na1.96Ca0.96Eu0.04P2O7. *Oklahoma Academy of Science* (88) Mar 2008 ISSN: 0078-43
- Hallford, R.L.,Tran, K., Berlin, D.K., Eastman, M.A., Yu, V.K., Praliev, K.D. Synthesis, Stereochemical, and Conformational Studies of Selected 3,7-Diheterabicyclo[3.3.1]nonan-9-ol and 7-Benzyl-9-(4-N,N'-Dimethylaminophenyl)-3-thia-7-aza-bicyclo[3.3.1]nonan-9-ol. *Phosphorous, Sulfur, and Silicon*. (2007)
- Hallford, R.L.,Tran, K., Berlin, D.K., Holt, E.M., Eastman, M.A., Yu, V.K., Praliev, K.D. Synthesis and Conformational Studies of Tertiary Alcohols Derived From Tetrahydro-4H-Pyran-4-one and Tetrahydropyran-4-one. *Phosphorous, Sulfur, and Silicon*. (2005)
- Hallford, Randal L. Anionic Copper(I), Silver(I), and Gold(I) Halide Complexes: Structure, Symmetry, and Luminescence., *Thesis, Oklahoma State University*. (2003)
- Hallford, R.L. Analysis of Thermal Motion of Hydrogen in X-ray Crystallography., *Journal of Applied Mathematics*, (1995).
- Hallford Randal L. An X-ray Crystallographic Study of Hydrogen Atom Thermal Motion in Imidazole. *Thesis, Pittsburgh State University*. (1994)
- Hallford, R.L.,Park, H., Minick, D., Draganjac, M., Cordes, A.W., Eggleton, G. The Reaction of CpRu(PPh3) with Organic Thiols., *Inorganica Chemica Acta*, **203** 195 (1993).
- Hallford, Randal;Thomas, K. R. Justin; Chandrasekhar, Vadapalli; Scott, Syrona R.; Cordes, A. Wallace. Synthesis and Spectroscopy of mono- and di-nuclear copper complexes of pyrazoleylcyclotriphosphazine. Crystal structure of an unusual cyclotriphosphazene-bridged dicopper complex. *Dalton Transactions* **17** 2589-94 (1993).
- Hallford, Randal;Thomas, K. R. Justin; Chandrasekhar, V.; Pal, Parthasarathy; Scott, Syrona R.; Cordes, A. W. Unusual tridentate N3 capping coordination behavior of hexakis(3,5-dimethylpyrazolyl)cyclotriphosphazene, N3P3(3,5-Me2Pz)6. *Inorganic Chemistry* 32(**5**), 606-11 (1993)
- Hallford, R.L.,Cordes, A.W., Glarum, S.H., Haddon, R.C., Hicks, R.G., Kennepohl, D.K., Oakley, R.T., Palstra, T.M., Scott, S.R. Preparation and Solid State Determination of 1,2,3,5-Diselenadiazoyl [HCN2 Se2]., *J. Chem. Soc. Comm*., **17** 1265 (1992).
- Hallford, R.L.,Chivers, T., Hilts, R.W., Krouse, I.H., Cordes, A.W., Scott, S.R. Preparation and 31P NMR Characterization of N-bonded Complexes of Platinum(II) with a Phosphadithiatriazine: X-ray Structure of trans-PtCl2 (PEt3)(1-N-Ph2 PS2 N3). *J. Canad. Chem*. **70** 2602 (1992).

Presentations

- *Cancer Mechanism Through Non-Liner Physics* Nature Conference "Functional Dynamics-Visualizing Molecules in Action". Arizona State University, Tempe, AZ. November 2019.
- *Thermodynamic Analysis of the Ras-GTP Moiety Hydrolysis via Non-Equilibrium Entropy Changes.* ACS Pentasectional meeting, Norman, OK. 2019. Poster presentation: Bailey Smoot, Randal Hallford.
- *Cancer Mechanism Through Non-Liner Physics*. International Biophysics Symposium, Baltimore, MD 2019. Poster presentation: Salvatore Capotosto, Bailey Smoot, Randal Hallford and Preet Sharma
- *Entropy Generation and Fokker-Planck Equations for Cancer Cell Growth*. International Biophysics Symposium, Baltimore, MD 2019. Poster presentation: Salvatore Capotosto, Bailey Smoot, Randal Hallford and Preet Sharma
- *Physics of the Origins* Kiwanis Club Wichita Falls, TX. August, 2018.

- *Electronic Problems in catalysis* Science Café seminar, Sikes Lake Ampitheater. Wichita Falls TX. April 2018
- *Making Potential Pharmaceuticals* Maker's Faire, Wichita Falls TX. October 2017.
- *Quantum Effects in Molecular Species* Science café public seminar, Wichita Falls TX. September 14th 2017
- *A Physicists View of Creation* Live Less Ordinary Conference, Urshan Graduate Seminary, St. Louis MO. May 2015
- *"Spectroscopic Analysis of Global Warming"* Hallford, R.L. Campus seminar, Midwestern State University. November 2010.
- "*Periodic Properties of Selected Elements"* Hallford, R. L. District IX "Meeting of the Minds" Science Educators Symposium, Midwestern State University. May 21 (2007)
- "*Novel Coinage Metal Fluorophores"* Hallford, R.L., Kair, L. American Chemical Society Meeting in Miniature, Ardmore Oklahoma. April, 2006.
- "*Synthesis and Characterization of novel silver(I) and copper(I) metal fluorophores".* Hallford, Randal L.; Kair, Laura. Department of Chemistry, Midwestern State University, Wichita Falls, TX. 230th ACS National Meeting, Washington D.C. Abstract Paper, American Chemical Society. August 28 (2005).
- "*Synthesis and Characterization of Novel Silver Metal Fluorophores"* Hallford, R.L.; Kair, Laura; Merkel, Erik. Department of Chemistry, Midwestern State University, Wichita Falls, TX. MSU Science Research Symposium. March 5 (2005)
- "*Quantum Implications of Quadrupoles in Spectroscopy"* Hallford, R.L. District IX "Meeting of the Minds" Science Educators Symposium, Midwestern State University. May 21, (2005)
- *"New Research at Midwestern State University"* Hallford, R.L. Invited presentation to the Kiwanis Club of Wichita Falls TX. August 12, 2004.
- "*Implications of some Synthetic and Theoretical Research"* Hallford, R.L. District IX "Meeting of the Minds" Science Educators Symposium, Midwestern State University. March 27, (2004)
- *"Comparison of Silver and Gold Halide Complexes with Crown Ether Encapsulated Alkali and Alkaline Earth Cations*" Hallford, R.L., Holt, E.M. Graduate Research Symposium, Oklahoma State University. March (2002)
- "*Comparison of Emission from Solid State Complexes of Ag(I) and Cu(I)"* Hallford, R.L., Holt, E.M. Abstract Paper, American Chemical Society, (2001). 221st Inorganic Division ACS Conference San Diego, CA.
- "*Solvent Influence on Structural Motif for Solid State Silver Iodide Organophosphine Complexes"* Hallford, R.L. and Holt, E.M. Presented to the American Chemical Society Pentasectional Meeting, Oklahoma State University. April(2000)