

Nigam Prasad Rath

Research Professor

Department of Chemistry and Biochemistry
University of Missouri - St. Louis
One University Boulevard
St. Louis, MO 63121.

E-mail: rathn@umsl.edu
Phone: 314-516-5333
FAX: 314-516-5342

Education:

B. Sc. (Honors):

1st Class Honors in Chemistry with Distinction,
Berhampur University, Berhampur, India, 1977.

M. Sc. (Chemistry):

1st Class, Berhampur University, Berhampur, India, 1979.

Ph. D. (Chemistry):

Oklahoma State University, Stillwater, OK, USA, 1985.

Professional Experience:

Research Professor, Department of Chemistry and Biochemistry, University of Missouri, St. Louis, MO, 2004 to present.

Research Associate Professor, Department of Chemistry, University of Missouri, St. Louis, MO, 1997 to 2004.

Research Assistant Professor, Department of Chemistry, University of Missouri, St. Louis, MO, 1989 to 1996.

Assistant Faculty Fellow, Department of Chemistry, University of Notre Dame, Notre Dame, IN 1987 to 1989.

Post Doctoral Research Associate, Department of Chemistry, University of Notre Dame, Notre Dame, IN 1986-87.

Graduate Assistant, Department of Chemistry, Oklahoma State University, Stillwater, OK 1982 to 1985.

Junior Research Fellow (CSIR), Department of Chemistry, Indian Institute of Technology, Kharagpur, India, 1981-82.

Junior Research Fellow, Department of Chemistry, Indian Institute of Technology, Kanpur, India, 1979 to 1981.

Professional Positions:

Visiting Scientist, Monsanto Corporate Research, Chesterfield, MO, 1992 to 1994.

Scientific Consultant, Regional Research Laboratory, Trivandrum, India, 1992 to present.

Assistant Professor, Evening College, University of Missouri, St. Louis, 1992 to 2000.

Research Mentor, Engelmann Mathematics and Science Institute, University of Missouri, St. Louis, 1990 to 1998.

Research Mentor, NSF STARS Program, University of Missouri, St. Louis, 1999 to present.

Honors and Awards:

National Merit Scholarship, India, 1977-79.

Junior Research Fellowship, Council of Scientific and Industrial Research, India, 1981-82.

American Chemical Society Travel Award for Students, 1985.

Service Award, George Engelmann Mathematics and Science Institute, University of Missouri - St. Louis, MO, 1994.

Organizations:

Member, American Crystallography Association

Teaching experience:

At the University of Missouri - St. Louis

General Chemistry (CHEM 1)

General Chemistry Laboratory (CHEM 3)

Chemistry and Society (CHEM 10)

Chemistry in the environment and everyday living (CHEM 10, CHEM 1011)

Chemistry for the health profession (CHEM 1052 and CHEM 1062)

Special Topics in Introductory Chemistry (CHEM 13)

Special Topics in Inorganic Chemistry - Chemical Crystallography (CHEM 449, CHEM5449-graduate)

Inorganic Chemistry Laboratory (CHEM 343, Taught Crystallography part)

Organic Chemistry Laboratory (CHEM 363, CHEM3643 Taught Crystallography part)

Prior to joining UM, St. Louis

Instructor, Inorganic Chemistry, Indian Institute of Technology, Kharagpur, India, 1981-82.

Graduate Teaching Assistant, General, Organic and Inorganic Chemistry, Oklahoma State Univ., Stillwater, OK, 1982-85.

Substitute Lecturer, Inorganic Chemistry, University of Notre Dame, Notre Dame, IN, 1986-88.

Research Interests:

Single crystal X-ray diffraction study of novel organic and organometallic compounds.

Weak interactions, polymorphism and other inter-molecular interactions

Application of computers and structural data bases in chemistry.

Solution and refinement of "difficult" crystal structures.

Publications:

1. Tetranuclear Metal Complexes of Ni(II) with m-Bis(1,3,5- trioxohexyl)benzene and m-Bis(1,3,5-trioxo-5-phenyl pentyl)benzene and Corresponding Macrocyclic Schiff Base Compounds Formed on Reaction with o-phenylenediamine. A. K. Jena, Nigam P. Rath, Bhagirathi Sahoo and B. Sahoo. *Ind. J. Chem.*, **1983**, 122A, 371-5.
2. Structural Comparison of $(\text{CuCH}_3\text{CN})_4$ dibenzo-18-crown-6 (I) and $(\text{CuI}\text{CH}_3\text{CN})_x$ (II) fluorescent Cu(I) materials. J. P. Jasinski, Nigam P. Rath and Elizabeth M. Holt. *Inorg. Chim. Acta*, **1985**, 97, 91-7.
3. Copper(I) Iodide complexes of novel structure: $(\text{Cu}_4\text{I}_6)(\text{Cu}_8\text{I}_{13})\text{K}_7(12\text{-crown-4})_6$ (I), $(\text{Cu}_4\text{I}_6)\text{K}_2(15\text{-crown-5})_2$ (II) and $(\text{Cu}_3\text{I}_4)\text{K}(\text{dibenzo-24-crown-8})$ (III). Nigam P. Rath and Elizabeth M. Holt. *J. Chem. Soc., Chem. Commun.*, **1985**, 665-7.
4. Fluorescent Copper(I) complexes : Structure and spectroscopic characterization of $\text{Cu}_4\text{I}_4(\text{p-toluidine})_2(\text{acetonitrile})_2$ and $[\text{Cu}_2\text{I}_2(\text{p-chloroaniline})(\text{acetonitrile})_2]_2$; tetrameric complexes of mixed ligand character. Nigam P. Rath, Elizabeth M. Holt and K. Tanimura. *Inorg. Chem.*, **1985**, 24, 3934-8.
5. Fluorescent Copper(I) Iodide systems; correlation of structural parameters with emission characteristics of quinoline complexes of stoichiometry 1:1:2 and 1:1:1. Nigam P. Rath and Elizabeth M. Holt. *J. Chem. Soc., Dalton Trans.*, **1986**, 11, 2303-10.
6. Synthesis and structural characterization of CuI_2^- . Nigam P. Rath and Elizabeth M. Holt. *J. Chem. Soc., Chem. Commun.*, **1986**, 11, 311-2.
7. Fluorescent Copper(I) complexes: Complexes of CuI and pyridine derivatives of rhombic; $\text{Cu}_2\text{I}_2(3\text{-picoline})_4$ (I) and polymeric structure; $[\text{CuI}(2\text{-picoline})]_x$ (II) and $[\text{CuI}(2,4\text{-lutidine})]_x$ (III). Nigam P. Rath, Jana L. Maxwell and Elizabeth M. Holt. *J. Chem. Soc., Dalton Trans.*, **1986**, 11, 2449-53.
8. Multiple deprotonation of a ferraborane: Evidence for the formation of a discrete Transition metal boride. Nigam P. Rath and Thomas P. Fehlner. *J. Am. Chem. Soc.*, **1987**, 109, 5273-4.
9. Interaction of iron with boron in metal-rich metallaboranes resulting in large deshielding and rapid relaxation process of boron-11 nucleus. Nigam P. Rath and Thomas P. Fehlner. *J. Am. Chem. Soc.*, **1988**, 110, 5345-9.
10. Synthesis and characterization of $\text{HFe}_4(\text{CO})_{12}\text{CBH}_2$. A cluster substituted tricoordinate monoborane. Xiangsheng Meng, Nigam P. Rath and Thomas P. Fehlner. *J. Am. Chem. Soc.*, **1989**, 111, 3422-3.
11. Metalloporphyrine π -cation radicals. Intermolecular spin coupling in zinc tetraphenyl porphyrine derivatives. Hungsun Song, Nigam P. Rath, Christopher A. Reed and W. Robert Scheidt. *Inorg. Chem.*, **1989**, 28, 1839-47.
12. Ferromagnetic Coupling via Imidazolates in an Iron(III)- Porphyrine-Dicopper(II) System. Carol A. Koch, Christopher A. Reed, Greg A. Brewer, Nigam P. Rath, W. Robert Scheidt, Govind Gupta and George Lang. *J. Am. Chem. Soc.*, **1989**, 111, 7645-8.
13. Reaction of 1,1-Dimethylallene with $\text{NiMo}(\text{CO})_4(\text{h-C}_5\text{H}_5)$ ($\text{h-C}_5\text{H}_4\text{Me}$). Isomerization of the products to $\text{NiMo}(\mu\text{-CO})(\text{CO})\{\mu\text{-}\eta^1, \eta^3\text{-C}_5\text{H}_5\}(\eta\text{-C}_5\text{H}_4\text{Me})$: A 1,2-methyl

- migration or a 1,4- proton shift? Michael J. Checuti, Steven R. McDonald and Nigam P. Rath. *Organometallics*, **1989**, 8, 2077-9.
14. Photo-rearrangement of bridgehead aryl-substituted dibenzo- barrelenes. Study state and laser flash photolysis studies. S. Pratapan, K. Ashok, K. R. Gopidas, N. P. Rath, P. K. Das and M. V. George. *J. Org. Chem.*, **1990**, 55, 1304-8.
 15. A New Synthetic Metal Precursor: Dimethyltetrathiotetracene and related compounds. Toshio Maruo, Megh Singh, M. Thomas Jones, Nigam P. Rath and Dong Min. Electrical, Optical and Magnetic Properties of Organic Solid State Materials, (Ed. L Y. Chang), *Material Research Society Proceedings*, **1990**, 173, 149-54.
 16. The Synthesis and Reactivity of the Metal Substituted Borane $(\text{CO})_4\text{CoBH}_2$. THF. Preparation of the Ambiphilic Clusters $(\text{CO})_9\text{Co}_3\text{C}(\text{CH}_2)_n\text{OH}$; $n = 4,5$. John D. Basil, Allen A. Aradi, Nripendra K. Bhattacharya, Nigam P. Rath, Charles Eigenbrot and Thomas P. Fehlner. *Inorg. Chem.*, **1990**, 29, 1260-70.
 17. Reductive Elimination Reactions from Platinum Dimers Bridged by (Diphenylphosphino)cyclopentadienyl Ligands. Gordon K. Anderson, M. Lin and Nigam P. Rath. *Organometallics*, **1990**, 9, 2880-81.
 18. Synthesis, Spectroscopic and Structural Studies of Spirocyclic Pseudosilatrane. Joyce Y. Corey, Nigam P. Rath, Christy S. John and Eugene R. Corey. *J. Organomet. Chem.*, **1990**, 399, 221-33.
 19. Synthesis of 9,10-Dihydrosilanthracenes with Substituents Ortho to the Silicon and Methylene Bridges. Thomas C. Bedard, Joyce Y. Corey, Lura D. Lange and Nigam P. Rath. *J. Organomet. Chem.*, **1991**, 401, 261-72.
 20. Hemiketal Formation and Subsequent Intramolecular Acylation of an N-Hydroxy beta Lactam. M. A. Williams, Marvin J. Miller and Nigam P. Rath. *J. Org. Chem.*, **1991**, 56, 1293-6.
 21. Reaction of Compounds Containing Ni-Ni, Ni-Mo and Ni-W bonds with Allene and 1,1-Dimethylallene. X-Ray Diffraction Studies of the π -allylic complexes $\text{NiMo}(\text{CO})_2\{\text{m-h}^3, \eta^3\text{C}_9\text{H}_{12}\}(\eta^5\text{-C}_5\text{H}_5)(\eta^5\text{-C}_5\text{H}_4\text{Me})$ and $\text{NiMo}(\text{m-CO})(\text{CO})\{\mu\text{-}\eta^1, \eta^3\text{-C}(\text{Me})\text{-C}(\text{Me})\text{CH}_2\}(\eta^5\text{-C}_5\text{H}_5)(\eta^5\text{-C}_5\text{H}_4\text{Me})(\text{Ni-Mo})$. Michael J. Checuti, Phillip E. Fanwick, Steven R. McDonald and Nigam P. Rath. *Organometallics*, **1991**, 10, 1551-60
 22. Electron Transfer Reactions. Reaction of Tetracyclone, Tetraphenylfuran and related substrates with potassium. B. Pandey, M. P. Mahajan, R. K. Tikare, M. Muneer, Nigam P. Rath, Prashant V. Kamat and Manapurathu. V. George. *Res. Chem. Intermediates*, **1991**, 15, 271-91.
 23. Synthesis and Physical Studies of a New Organic Donor: 2,3-Dimethyl-5,6:11,12-bis(dithio)tetracene. Toshio Maruo, M. Thomas Jones, Megh Singh and Nigam P. Rath. *Chemistry of Materials*, **1991**, 3, 630-4.
 24. A Carbido Cluster as a Bulky π Donor Ligand. Preparation and Characterization of $[\text{HFe}_4(\text{CO})_{12}\text{C}]\text{BXY}$ ($\text{X}=\text{Y}=\text{H}, \text{Cl}, \text{Br}$; $\text{X}=\text{H}, \text{Y}=\text{Cl}, \text{Br}, \text{OH}$). Xiangsheng Meng, Nigam P. Rath, Thomas P. Fehlner and Arnold L. Rheingold. *Organometallics*, **1991**, 10, 1986-93.

25. Novel Phototransformations of bridgehead-dimethyl-substituted Dibenzobarrelene. Structure of the Photoproducts. V. Asokan, S. A. Kumar, S. Das, N. P. Rath, M. V. George. *J. Org. Chem.*, **1991**, *56*, 5890-92.
26. Solution and Solid State Conformations of 5-5'-Bistrimethylsilyl -10,11-dihydro-5-H-dibenzo [b,f]Silepins. Lura D. Lange, Joyce Y. Corey, Nigam P. Rath. *Organometallics*, **1991**, *10*, 3189-96.
27. Nucleophilic Attack on or Displacement of Coordinated 1,5-cyclooctadien. Structure of $[Pt\{s:h^2-C_8H_{12}(PPh_3)\}(dppe)] [ClO_4]$ and $[Pt(H_2O)_2(dppe)][SO_3CF_3]_2$. Stephen Fallis, Gordon K. Anderson and Nigam P. Rath. *Organometallics*, **1991**, *10*, 3180-84.
28. Synthesis and Structure of the Tetrametallic Complex $[TlAu(C_5H_4PPh_2)_2]_2$. Gordon K. Anderson and Nigam P. Rath. *J. Organomet. Chem.*, **1991**, *414*, 129-35.
29. X-Ray Structural and NMR Characterization of the Cu(I) Dimer $[Cu(dmpe)_2]_2 (BF_4)_2$, where dmpe is 1,2-Bis(dimethylphosphino) ethane. Bernhard Mohr, Elwood E. Brooks, Nigam P. Rath, and Edward Deutsch. *Inorg. Chem.*, 1991, *30*, 4541-45.
30. Synthesis of Two Isomers of Diphenylphosphinoindene and their Platinum(II) Complexes. Kathleen A. Fallis, Gordon K. Anderson and Nigam P. Rath. *Organometallics*, **1992**, *11*, 885-8.
31. Three Isomers of (Triphenylstannyl)-nido-pentaborane(9): Isolation and Structural Characterization of 2,3- μ -(SnPh₃)B₅H₈, 1-(SnPh₃)B₅H₈ and 1-(SnClPh₂)B₅H₈. D. K. Srivastava, Nigam P. Rath, and Lawrence Barton. *Organomet.*, **1992**, *11*, 2263-73.
32. Stoichiometric Removal of ligand from Phosphine-ligated Copper(I) Reagents with BH₃.THF: A Novel Synthesis of Di- μ -bromo-tetrakis(methyldiphenylphosphine)-Dicopper(I) and the Structures of CuBr[PMePh₂]₃ and $\{CuBr[PMePh_2]_3\}_2$. D. K. Srivastava, Nigam P. Rath, and Lawrence Barton. *Polyhedron*, **1992**, *11*, 1251-9.
33. Platinum Dimers Bridged by Diphenylphosphinocyclopentadienyl Ligands. Molecular Structure and NMR Studies of Two Isomeric Forms of the Complexes $[Pt_2R_2(\mu-C_5H_4PPh_2)_2]$. Minren Lin, Kathleen A. Fallis, Gordon K. Anderson and Nigam P. Rath and Michael Y. Chiang. *J. Am. Chem. Soc.*, **1992**, *114*, 4687-93.
34. The Synthesis and Physical Studies of a New Synthetic Metal: The Charge Transfer Salt of Dimethyltetrathiotetracene Tetracyanoethylene. Kim J. Kilgore, Nigam P. Rath and M. Thomas Jones. *Material Research Society Proceedings*, **1992**, *247*, 529-35.
35. Synthesis of An Allene containing Germacranoid. Rudolph E. K. Winter, William R. Shiang, Steve A. Kolodziej and Nigam P. Rath. *Tetrahedron Let.*, **1992**, *33*, 2941-4.
36. Interesting Phototransformations of Aziridylmaleates and Fumarates. Steady state and Laser Flash Photolysis studies. D. Ramaiah, K. Ashok, R. Barik, D. Venugopal, N. P. Rath, K. Bhattacharyya, P. K. Das and M. V. George. *J. Org. Chem.*, **1992**, *57*, 6032-7.
37. Novel Photorearrangement of Bridgehead-disubstituted dibenzobarrelenes. Steady state and Laser Flash Photolysis Studies of a 9-hydroxymethyl-10-methyl-dibenzobarrelene. S. A. Kumar, C. V. Asokan, S. Das, J. A. Wilbur, N. P. Rath and M. V. George. *J. Photochem and Photobiol*, **1993**, *A71*, 27-31.

38. Structure of Chiral Monocyclic Phosphonamide. Kevin J. Koeller, Nigam P. Rath and Christopher D. Spilling. *Acta Cryst (Sectn C)*, **1993**, 1199-201.
39. Structure and Spectra of 4,5- μ -(Tetracarbonyl)ironhexaborane(10), $[\text{Fe}(\text{CO})_4\text{B}_6\text{H}_9]^-$. Dileep K. Srivastava, Nigam P. Rath, Lawrence Barton, James D. Ragaini, Orin Hollander, Robert Godfroid and Sheldon G. Shore. *Organometallics*, **1993**, 12, 2017-24.
40. Structure of a Chiral Bicyclic 1-hydroxy Phosphonamide. Kevin J. Koeller, Nigam P. Rath and Christopher D. Spilling. *Acta Cryst (Sectn C)*, **1993**, 1547-9.
41. Synthesis and Reactions of Cationic Palladium and Platinum Cyclopentadienyl Complexes. Molecular Structure of (5-Cyclopentadienyl)-[1,2-bis(diphenylphosphino)ethane]platinum (II) Triflate. Stephen Fallis, Lori Rodriguez, Gordon K. Anderson and Nigam P. Rath. *Organometallics*, **1993**, 12, 3851-5.
42. The Dicobalt Hexacarbonyl(alkyne) Moiety as a Stereocontrol Element in Intramolecular Friedel-Crafts Alkylations. David D. Grove, James R. Corte, Roxanne P. Spencer, Malinda E. Pauly and Nigam P. Rath. *J. Chem. Soc. Chem Commun.*, **1994**, 49-50.
43. Synthesis and reactions of Mesitylplatinum Complexes. Molecular structure of Bromo(mesityl)(1,5-cyclooctadiene)Platinum(II). K. A. Fallis, G. K. Anderson and N. P. Rath. *Organometallics*, **1993**, 12, 2435-9.
44. Aqua-dichloro-triphenylphosphine-platinum (II). Nigam P. Rath, Kathleen A. Fallis and Gordon K. Anderson. *Acta Cryst (Sectn C)*, **1993**, 49, 2079-81.
45. The Enantioselective Addition of Dialkylphosphites to Aldehydes: Catalysis by a Lanthanum Binaphthoxide Complex. Nigam P. Rath and Christopher D. Spilling. *Tet. Letters*, **1994**, 35, 227-30.
46. *Meso*- and *rac*-2,7-Diphenyl-3,5-octadiyne-2,7-diol, $\text{C}_{20}\text{H}_{18}\text{O}_2$. M. D. Lord, R. E. K. Winter and N. P. Rath. *Acta Cryst (Sectn C)*, **1994**, 116-20.
47. Triphenylstannyl-derivatives of Pentaborane(9) and Hexaborane(10). D. Srivastava, H. Fang, N. P. Rath and L. Barton. *Current Topics in Chemistry of Boron*, Royal Society of Chemistry, **1994**, 310-13.
48. Carbonylation of Organoplatinum Dimers Bridged by Diphenyl Phosphino-cyclopentadienyl Ligands. Structural Characterization of complexes containing 1,1- or 1,2- substituted η^1 -cyclopentadienyl groups and reductive elimination of ketones. K. A. Fallis, G. K. Anderson, M. Lin and N. P. Rath. *Organometallics*, **1994**, 13, 478-88.
49. Photorearrangement of Bridgehead Disubstituted Dibenzobarrelene Esters and Lactones. S. Ajaya Kumar, C. S. Rajesh, Suresh Das, Nigam P. Rath and M. V. George. *J.Photochem. Photobio.*, **1995**, A86, 177-83.
50. A Chiral Bicyclic 1-Acetoxy Phosphonamide. Vincent J. Blazis, Kevin J. Koeller, Nigam P. Rath and Christopher D. Spilling. *Acta Cryst (Sectn C)*, **1995**, 86-8.
51. $\{1,2\{\eta^5\text{-(C}_5\text{Me}_5\text{)Ir}\}2\text{B}_5\text{H}_5\}$: Isolation and Structural Characterization of a *closo*-polyhedral Metallaborane Cluster with capping BH Group. Jonathan Bould, Nigam P. Rath and L. Barton. *Organometallics*, **1995**, 14, 2119-22.

52. Isomers of $\text{SnPh}_2(\text{B}_5\text{H}_8)_2$: Synthesis and Characterization of μ, μ' - $\text{SnPh}_2(\text{B}_5\text{H}_8)_2$, $\mu, 2'$ - $\text{SnPh}_2(\text{B}_5\text{H}_8)_2$, and $\mu, 1'$ - $\text{SnPh}_2(\text{B}_5\text{H}_8)_2$. Hong Fang, Dong Zhao, Nigam P. Rath, Lee Brammer and Lawrence Barton. *Organometallics*, **1995**, *14*, 1700-11.
53. (Tetraphenylporphyrinato)zirconium(IV) Diacetate. Jean L. Huhmann, Joyce Y. Corey and Nigam P. Rath. *Acta Cryst. (Sectn C)*, **1995**, 195-6.
54. Zirconocene Dichloride. Joyce Y. Corey, Xio-Hong Zhu, Lee Brammer and Nigam P. Rath. *Acta Cryst (Sectn C)*, **1995**, C51, 565-7.
55. Determination of the Enantiomeric Purity and Absolute Configuration of α -Hydroxy Phosphonates. James J. Kozlowski, Nigam P. Rath and Christopher D. Spilling. *Tetrahedron*, **1995**, 51(23), 6385-6396.
56. Reaction of Chiral Phosphorous Acid Diamides: Lewis Acid Catalyzed Addition to Imines and Oxidation with SnCl_4 . Kevin J. Koeller, Nigam P. Rath and Christopher D. Spilling. *Phosphorus, Sulfur and Silicon*, **1995**, 103, 171-181.
57. Structure of *trans*-Chloro(methyl)bis(triphenylarsine) palladium (II). Nigam P. Rath, Folami T. Ladipo and Gordon K. Anderson. *Acta Cryst (Sectn. C)*, **1995**, C51, 1289-90.
58. 1,1,1-(CO)₃-2,2,2-(CO)₂(PPh₃)-5-(PPh₃)-closo-1,2-FeIrB₅H₄: The first structurally characterized Closo-heterobimetalla- heptaborane system. J. Bould, Nigam P. Rath and Lawrence Barton. *Angew. Chemie*, **1995**, 34(15), 1641-3.
59. Isolation and Structural Characterization of *cis*- and *trans*- Forms of $[(\eta^5\text{-C}_5\text{Me}_5)\text{TiCl}_2]_2[\mu\text{-}\eta^5\text{:}\eta^5\text{-(C}_5\text{H}_3)_2(\text{SiMe}_2)_2]$. Joyce Y. Corey, Jean L. Huhmann and Nigam P. Rath. *Inorg. Chem.*, **1995**, 34, 3203-09.
60. Synthesis and Characterization of 1,9-Difluoro-5-methyl-5- phenyl-10, 11-dihydro-5H-dibenzo [b,f] silepin. Joyce Y. Corey, Alex A. Pitts, Rudolph E. K. Winter and Nigam P. Rath. *J. Organomet. Chem.*, **1995**, 499, 113-21.
61. *Nido*- $[(\text{C}_5\text{Me}_5)\text{Ir} \{ \text{B}_3\text{H}_7\{(\text{PPh}_3)_2(\text{CO})\text{Os}\}]$, *Closo*- $[(\text{C}_5\text{Me}_5)\text{Ir} \{ \text{B}_4\text{H}_6\{(\text{PPh}_3)_2(\text{CO})\text{Os}\}]$ and *Pileo*- $[(\text{PPh}_3)\text{COIrB}_5\text{H}_5\{(\text{PPh}_3)_2(\text{CO})\text{Os}\}]$: A Unique Homologous Series of Iridaosmaborane Cluster Types. J. Bould, N. P. Rath and L. Barton. *J. Chem Soc., Chem. Commun.*, **1995**, 1285-86.
62. Synthesis of Heterobimetallaboranes and Related Species from $[(\text{PPh}_3)_2(\text{CO})\text{OsB}_5\text{H}_9]$: *Pileo*- $[(\text{PPh}_3)_2(\text{CO})\text{OsB}_5\text{H}_5\text{IrH}(\text{PPh}_3)(\text{CO})]$, *Closo*- $[(\text{PPh}_3)_2(\text{CO})(\mu\text{-H})\text{OsB}_5\text{H}_5\{\eta^5\text{-(C}_5\text{Me}_5)\text{M}\}]$ (M = Rh, Ir), *Nido*- $[(\text{PPh}_3)_2(\text{CO})\text{Os}(\mu\text{-H})\{\eta^5\text{-(C}_5\text{Me}_5)\text{Ir}\}\text{B}_3\text{H}_6]$, and *Nido*- $[(\text{PPh}_3)_2(\text{CO})\text{OsB}_4\text{H}_7(n\text{-Bu})]$. J. Bould, M. Pasiaka, J. Braddock-Wilking, N. P. Rath, L. Barton and C. Gloeckner. *Organometallics*, **1995**, *14*, 5138-49.
63. $[4\pi + 2\pi]$ Cycloaddition of o-Quinones and Symmetrical 6,6-Dialkyl and Cycloalkyl fulvenes. Vijay Nair, Sasi Kumar, Nigam P. Rath and George O. Morton. *Chem. Lett.*, **1995**, 383-84.
64. The X-Ray Crystal Structures of the *ansa*-Metallocenes, $\text{Me}_2\text{C}(\text{C}_5\text{H}_4)_2\text{MCl}_2$ (M= Ti, Zr and Hf). Raef M. Shaltout, Joyce Y. Corey and Nigam P. Rath. *J. Organomet. Chem.*, **1995**, 503, 205-12.

65. Structure of Ethyl(3-bromo-4-hydroxyphenyl)-2E-Oximino-Propanoate. Todd R. Boehlow, Nigam P. Rath, Christopher D. Spilling. *Acta Cryst (Sect C)*, **1995**, 2654-56.
66. Macropolyhedral Boron Containing Cluster Chemistry: Nineteen-vertex $[S_2B_{17}(SMe_2)_2]$: An Unusual Apical Boron Atom of Cluster Connectivity Six and a New Polyhedral Boron Building Block. P. Kaur, J. Holub, N. P. Rath, J. Bould, L. Barton, B. Stibr and J. D. Kennedy. *J. Chem. Soc., Chem. Commun.*, **1996**, 273-75.
67. Synthesis and Characterization of *nido*- $[1,1,2,2-(CO)_4-1,2-(PPh_3)_2-1,2-FeIrB_2H_5]$: A Heterobimetallaborane Analogue of *Nido*- $[B_4H_7]$. Jonathan Bould, Nigam P. Rath and Lawrence Barton. *Inorg. Chemistry*, **1996**, 35, 35-39.
68. Chemistry of Hexaborane (10) Analogue $(PPh_3)_2(CO)IrB_5H_8$: Formation and Characterization of the Heterobimetallaheptaboranes $1,1,1-(CO)_3-2,2,2-(CO)_2(PPh_3)_4-(PPh_3)$ -*closo*- $1,2-FeIrB_5H_4$ and $2,2,2-(CO)(PPh_3)_2-7,7-Cl-(PMe_2Ph)$ -*nido*- $2,7-IrPtB_5H_7$. Jonathan Bould, Nigam P. Rath and Lawrence Barton. *Inorg. Chem.*, **1996**, 35, 2062-69.
69. Recent Studies of Group 14 Derivatives of Small *Nido*-boranes. Lawrence Barton, Hong Fang, Deelip K. Srivastava, Tracy A. Schweitzer and Nigam P. Rath. *Applied Organometallic Chemistry*, **1996**, 10, 183-198.
70. A Photoproduct Derived from 9-benzyl Substituted Dibenzobarrelene. Thomas Mathew, S. Ajaya Kumar, Suresh Das, Nigam. P. Rath and M. V. George. *Acta Cryst. (Sectn. C)*, **1996**, C52, 942-944.
71. Chiral α -Hydroxy Acids: Racemic 2-Hydroxy-2,3,3-Trimethylbutanoic Acid and 2-Hydroxy-2-Trimethylsilylpropanoic Acid. Robert W. Murray, Megh Singh and Nigam P. Rath. *Acta Cryst (Sectn. C)*, **1996**, C52, 1282-85.
72. $[(CO)H(PPh_3)_2$ -*arachno*- $OsB_3H_8]$. Jonathan Bould, Nigam P. Rath and Lawrence Barton. *Acta Cryst. (Sectn C)*, **1996**, C52, 1388-1390.
73. Macropolyhedral Boron Containing Cluster Chemistry: The Isolation and Characterization of the eighteen-vertex *nido*-5'-iridaoctaborano-(3',8':1,2')-*closo*-4-iridadecaborane, $[(CO)(PMe_3)_2IrB_{16}H_{14}Ir(CO)(PMe_3)_2]$. Lawrence Barton, Jonathan Bould, Nigam P. Rath and John D. Kennedy. *J. Chem. Soc., Dalton Trans.*, **1996**, 3145-49.
74. Phototransformation of C-Benzoylaziridines. Dipolarophilic Trapping of Photogenerated Azomethine Ylides. D. Ramaiah, M. Muneer, K. R. Gopidas, P. K. Das, Nigam P. Rath and M. V. George. *J. Org. Chem*, **1996**, 61, 4240-46.
75. Stereochemistry in the Oxidation of Primary Amines to Nitro Compounds by Dimethyldioxirane. Robert W. Murray, Megh Singh and Nigam Rath. *Tetrahedron Asymmetry*, **1996**, 7(6), 1611-19.
76. Synthesis, Molecular Structure and Fluxional Behavior of dppm-bridged complexes of Platinum(II) with Linear Gold(I), Trigonal Silver(I) or Tetrahedral Mercury(II) centers. Chongfu Xu, Gordon K. Anderson, Lee Brammer, Janet Braddock-Wilking and Nigam P. Rath. *Organometallics*, **1996**, 15, 3972-79.
77. Phototransformations of Bridgehead-disubstituted Dibenzobarrelenes. Interesting Rearrangements of Dibenzosemibullvalene Intermediates Derived from 9-(hydroxyalkyl)-10-methoxy-Substituted Dibenzobarrelenes. D. Ramaiah, S. A. Kumar, C. V. Asokan,

- T. Mathew, S. Das, N. P. Rath and M. V. George. *J. Org. Chem.*, **1996**, *61*, 5468-73.
78. Formation of Heterobimetallaheptaboranes from the *nido*-metallaheptaboranes $(PPh_3)_2(CO)OsB_5H_9$ and $(PPh_3)_2(CO)IrB_5H_8$. Lawrence Barton, Jonathan Bould, Hong Fang and Nigam P. Rath. *Main Group Metal Chem.*, **1996**, *19*, 711-725.
79. Reaction of $(POR)Zr(OAc)_2$ with *n*-BuLi and the Solid State Structure of $[(TTP)Zr(\mu-OH)_2]_2$. Jean L. Huhmann, Joyce Y. Corey, Nigam P. Rath and Charles F. Campana. *J. Organomet. Chem.*, **1996**, *513*, 17-26.
80. Metallaborane Heteroatom Incorporation Reactions: Metallacarboranes, Metallathiaboranes and An Iridaazaborane From Iridanonaborane Precursors. Jonathan Bould, Nigam P. Rath and Lawrence Barton. *Organometallics*, **1996**, *15*, 4915-29.
81. Structure of (Tetraphenylporphyrinato)hafnium(IV) Diacetate Acetonitrile Solvate. Nigam P. Rath, Jean L. Huhmann and Joyce Y. Corey. *Acta Cryst (Sectn. C)*, **1996**, *C52*, 2486-8.
82. Structure of the Photoproduct Derived from 9-benzyl Substituted Dibenzobarrelene (1). M. Muneer, Nigam. P. Rath and M. V. George. *Acta Cryst (Sectn. C)*, **1996**, *C52*, 2800-2802.
83. Synthesis of the Complexes $[PdClR(cod)]$ (R=benzyl, ethyl; cod=1,5-cyclooctadien). β -Elimination from $[PdClEt(cod)]$ to give η^1 , η^2 -and η^3 -isomers of $[Pd_2(\mu-Cl)_2(C_8H_{13})_2]$. Robert A. Stockland, Jr., Gordon K. Anderson, Nigam P. Rath, Janet Braddock-Wilking and J. Christopher Ellegood. *Can. J. Chem.*, **1996**, *74*, 1990-7.
84. The Reaction of Dimethoxydioxirane with Chrysene: Formation of a Trioxide. Robert W. Murray, Megh Singh and Nigam P. Rath. *Tet. Lett.*, **1996**, *37*(48), 8671-4.
85. The Reaction of Hexamethylbenzene with Dimethyldioxirane. Robert W. Murray, Megh Singh and Nigam P. Rath. *J. Org. Chem.*, **1996**, *61*, 7660-1.
86. Phototransformations of 9-Ethyl-substituted Dibenzobarrelene. Oxygen Trapping of Diradical Intermediates. Thomas Mathew, S. Ajaya Kumar, Suresh Das, Nigam. P. Rath and M. V. George. *J.Photochem. Photobio.*, **1996**, *A95*, 137-41.
87. Synthesis of New Silyl-bridged (Bis)cyclopentadienyl Ligands and Complexes. Jean L. Huhmann, Joyce Y. Corey and Nigam P. Rath. *Organomet.*, **1996**, *15*, 4063-74.
88. Two Photoproducts Derived from 11,12- Dibenzo-9,10-dihydro-9,10-dimethoxy-9,10-ethenoanthracene. S. Ajaya Kumar, Thomas Mathew, Suresh Das, Nigam. P. Rath and M. V. George. *Acta Cryst (Sectn. C)*, **1996**, 2797-2800.
89. A Unique *Nido Exo-arachno* Equilibrium Involving $[(PPh_3)_2(CO)Os B_5H_9]$ and Its Base Adducts: Crystal and Molecular Structure of $[\{(PPh_3)_2(CO)OsB_4H_7\}(BH_2PPh_2Me)]$. Lawrence Barton, Jonathan Bould, Hong Fang, Kevin Hupp, Nigam P. Rath and Charles Gloeckner. *J. Am. Chem. Soc.*, **1997**, *119*, 631-2.
90. Methyl 4-Hydroxy-3-(4-methoxy-2-methoxymethylenoxy-phenyl)-2-(4-methoxy-2-methoxymethylenoxy-phenylmethyl)-5-oxo-2,5-dihydrofuran-2-carboxylate. Todd R. Boehlow, Nigam P. Rath and Christopher D. Spilling. *Acta Cryst (Sectn. C)*, **1997**, *C53*, 92-5.

91. Polyhedral azadirhodorane chemistry. Reaction of [$\{\text{RhCl}_2-(\eta^5\text{-C}_5\text{Me}_5)\}_2$] with $\text{EtH}_2\text{NB}_8\text{H}_{11}\text{NHET}$ to give contiguous ten-vertex [1-Et-6-7-($\eta^5\text{-C}_5\text{Me}_5$)₂-closo-6,7,1-Rh₂NB₇H₇]. Udo Doerfler, John D. Kennedy, Lawrence Barton, Christina M. Collins and Nigam P. Rath. *J. Chem. Soc., Dalton Trans.*, **1997**, 707-8.
92. The Isonido-Metalladecaborane[1,1,1-H{P(CH₃)₃}₂-6-Cl-1,2,4-IrC₂B₈H₉]. Jonathan Bould, Nigam P. Rath and Lawrence Barton. *Acta Cryst (Sectn. C)*, **1997**, 416-9.
93. Pseudopeptide Synthesis of a Pentaazamacrocyclic Containing Two *trans*-Fused Cyclohexane Rings. William L. Neumann, Gary W. Franklin, Kirby R. Sample, Karl W. Aston, Randy H. Weiss, Dennis P. Riley and Nigam P. Rath. *Tet. Letters*, **1997**, 38, 3143-46.
94. Phototransformations of Bridgehead-substituted Dibenzobarrelenes. Steady-state and Laser Flash Photolysis studies of 9-benzoyl and 9-(α -hydroxybenzyl) substituted Dibenzobarrelenes. S. Ajaya Kumar, Suresh Das, Nigam. P. Rath and M. V. George. *J.Photochem. Photobio.*, **1997**, 103, 69-73.
95. Nido exo-Arachno Metallahexaborane Equilibria: Formation of [$\{\text{(PPh}_3\text{)}_2\text{(CO)OsB}_5\text{H}_9\}$ (PR₃)] providing possible insights into the mechanism of formation of the key compound 1-[Fe(CO)₃]B₄H₈. L. Barton, J. Bould, H. Fang, K. Hupp and N. P. Rath. *Advances in the Chemistry of Boron. II*, W. Siebert, Ed.; Special Publication. Royal Society of Chemistry, **1997**, 201, 476-9.
96. 1-Acetyl-3-hydroxyadamantane and 1-Carboxy-3-hydroxyadamantane. Nigam P. Rath, Hong Gu and Robert W. Murray. *Acta Cryst (Sectn. C)*, **1997**, 944-46.
97. On Guaiol Oxygenation Products. Rudolph E. K. Winter, James A. Baker, Binh V. Lam, Andrew G. Breite and Nigam P. Rath. *Natural Product Lett.*, **1997**, 10, 105-9.
98. Application of Wallach's Rule in Comparison of the X-Ray Crystal Structures of the Racemate and the (S) Enantiomer of (1-Hydroxy-3-phenyl-2-propenyl) Dimethylphosphonate. Vincent J. Blazis, Kevin J. Koeller, Nigam P. Rath and Christopher D. Spilling. *Acta Cryst (Sectn. B)*, **1997**, 838-42.
99. Metallaborane Reaction Chemistry. Part 3. Reaction of Carbon Monoxide with [6-H-6-(PPh₃)-6^P,5^C- μ -(2-Ph₂P-C₆H₄)-nido-6-IrB₉H₁₂] and the isolation and characterization of two *arachno*-6-monoiridadecaborane, [6-(CO)-6-H-6,9-(PPh₃)₂-6^P,5^C- μ -(2-Ph₂PC₆H₄)-*arachno*-6-IrB₉H₁₁] and sym-[6-(CO)-6-H-6,6-(PMe₂Ph)₂-9-(PPh₃)-*arachno*-6-IrB₉H₁₁]. Jonathan Bould, Paul Brint, John D. Kennedy, Mark Thornton-Pett, Lawrence Barton and Nigam P. Rath. *Collect. Czechoslovakian Chemical Communications*, **1997**, 62, 1239-53.
100. Chemistry of Glucal Halohydrins(II): An Unusual Protecting Group effect in the Competitive Formation of Formyl Furanosides and Methyl Glucosides. John S. Kozlowski, Cecilia H. Marzabadi, Nigam P. Rath and Christopher D. Spilling. *Carbohydrate Res.*, **1997**, 300, 301-13.
101. Ground and Excited State Dipole Moments of *N,N'*-Bis(4-methoxycarbonylphenyl)piperazine and its Implications. G. Saroj, N. P. Rath and A. Samanta. *J. Chem. Res.*, **1997**, 332-3.
102. Dimethyl (\pm)-(1S*,2R*,3S*)-[3-Phenyl-1-(*N*-phenylcarbamoyloxy)-2,3-epoxypropyl]-phosphonate. Todd R. Boehlow, Antonette De. La Cruz, Nigam P. Rath and Christopher

- D. Spilling. *Acta Cryst (Sectn. C)*, **1997**, C53, 1947-49.
103. Preparation and Molecular Structure of $[(Cp_2Zr)_2B_5H_8][B_{11}H_{14}]$: A Dizirconaborane Containing a Cation Exhibiting a Novel Cluster Type. Rhodri Ll. Thomas, Nigam P Rath and Lawrence Barton. *J. Am. Chem. Soc.*, **1997**, 119, 12358-9.
104. Macropolyhedral boron-containing cluster chemistry. Triple cluster fusion and the molecular structure of $[(PMe_3)_2IrB_{26}H_{24}Ir(CO)(PMe_3)_2]$. A 28-vertex metallaborane cluster with a polyboron core. J. Bould, J. D. Kennedy, L. Barton and N. P. Rath. *Chem. Comm.*, **1997**, 2405-6.
105. Photoproducts Derived from the 9-Substituted-dibenzobarrelenes. M. Muneer, N. P. Rath and M. V. George. *Acta Cryst (Sectn. C)*, **1997**, 1475-8.
106. Divergent Pathways in the Reaction of Hexamethylbenzene with Dimethyldioxirane. Robert W. Murray, Megh Singh and Nigam P. Rath. *J. Org. Chem.*, **1997**, 62, 8794-9.
107. Triphenyl phosphine Promoted Addition of Dimethyl Acetylenedicarboxylate to 1,2-Benzoquinones: Facile Synthesis of Novel γ -Spirolactones. V. Nair, J. S. Nair, S. Kumar, A. U. Vinod and N. P. Rath. *J. Chem. Soc., Perkin Trans. I*, **1997**, 3129-30.
108. Diels-Alder reaction of a 6-Arenylfulvene with Dienes and Dienophiles and Related Chemistry. V. Nair, G. Anilkumar, K. V. Radhakrishnan, K. C. Sheela and N. P. Rath. *Tetrahedron*, **1997**, 53, 17361-372.
109. The Structure of $[1,1,1-H(Pme_3)_2-6-C1-1,2,4-IrC_2B_8H_9]$. J. Bould, N. P. Rath and L. Barton. *Acta Crystallographica*, **1997**, C53, 416-9.
110. $[8\pi+2\pi]$ Cycloaddition Reactions of 2H-Cyclohepta[b]furan-2-one with Acyclic 1,3-dienes: A Facile route to Novel Bicyclo[5,3,0] ring systems. V Nair, G. Anilkumar, M. V. Nandakumar, B. Mathew, N. P. Rath. *Tetrahedron, Lett.* **1997**, 38, 6441-4.
111. Periselective $[4\pi+2\pi]$ Cycloaddition Reactions of 3-Ethoxycarbonyl 2H-Cyclohepta[b]furan-2-one with Aralkenes. V. Nair, A. G. Nair, N. P. Rath and G. K. Eigendorf. *Chem. Lett.* **1997**, 505-6.
112. Synthesis and structures of dppm-bridged platinum-rhodium complexes. Chongfu Xu, Gordon K. Anderson, Nigam P. Rath. *Inorg. Chim. Acta.*, **1997**, 265, 241-8.
113. Diels-Alder Reactions of a 6-Arenylalkenyl Fulvene Participating both as Diene and Dienophile. V Nair, A. G. Nair, K. V. Radhakrishnan, M. V. Nandakumar and N. P. Rath. *Synlett.* **1997**, 767-8.
114. Hydride-bridged dipalladium complexes containing diphosphine ligands. Robert A. Jr. Stockland, Gordon K. Anderson, Nigam P. Rath. *Inorg. Chim. Acta.*, **1997**, 259, 173-8.
115. Catalytic dehydrocoupling of $PhSiH_3$ with bimetallic Ti and Zr complexes. Jean L. Huhmann, Joyce Y. Corey and Nigam P. Rath. *J. Organomet. Chem.*, **1997**, 533, 61-72.
116. Reactions of $[PdX_2(dppm)]$ Complexes with Grignard Reagents. Robert A. Jr. Stockland, Gordon K. Anderson, Nigam P. Rath. *Organometallics*, **1997**, 16, 5096-5101.

117. New Homochiral Amino-Phosphonamine Ligands: Application in Asymmetric Palladium Catalyzed Allylic Alkylation. Isabel C. F. Vasconcelos, Nigam P. Rath and Christopher D. Spilling. *Tetrahedron Asymm*, **1998**, 9, 937- 48.
118. Metallaborane Heteroatom Incorporation Reactions: Enyne Insertion into *arachno*-[(CO)(PMe₃)₂HIrB₈H₁₂]. Jonathan Bould, Nigam P. Rath, Lawrence Barton and John D. Kennedy. *Organomet.*, **1998**, 17, 902-7.
119. The Preparation and Structure of New Homochiral Diazaphosphole Ligands and Their Platinum (II) Chloride Complexes. Isabel C. F. Vasconcelos, Gordon K. Anderson, Nigam P. Rath and Christopher D. Spilling. *Tetrahedron Asymm*, **1998**, 9, 927- 35.
120. A Novel isomerization of 6,6-Tetramethylenefulvene to Cyclopent-1-enyl Cyclopentadiene and its cycloaddition Reactions: Synthesis of Polycyclic Molecular Frameworks. V. Nair, J. S. Nair, S. Kumar, N. P. Rath and P. G. Willard. *Tetrahedron Lett.*, **1998**, 39, 4603-6.
121. A Novel Photochemical Rearrangement of 1,3- Diaryl-1,2-dihydropentalenes to the 1,5-Isomers and their Domino Diels-Alder Reactions. V. Nair, G. Anilkumar, C.N. Jayan and N. P. Rath. *Tetrahedron Lett.*, **1998**, 39, 2437-40.
122. Novel 1,3-Dipolar Cycladdition Reaction of isomunchone with o-Quinones. V. Nair, K. C. Sheela, K. V. Radhakrishnan and N. P. Rath. *Tetrahedron Lett*, **1998**, 38, 5627-30.
123. Reduction of Tricarbonyl(η^6 -Indole)Chromium(0) Complexes. F. Christopher Pigge, Shiyue Fang and Nigam P. Rath. *J. Organomet. Chem*, **1998**, 559, 131-140.
124. Structure of the Three Cycloadducts formed by the reaction of Bis(phenylazo)stilbene with Acetylenic and Olefinic Dipolarophiles. D. Ramaiah, N. P. Rath and M. V. George. *Acta Cryst., C.*, **1998**, C54, 872-5.
125. 2-Phenyl-3-(5,6,7,7a-tetrahydro-1H-3H-pyrrolo[1,2-c]oxazol-3-ylidene)-1-propene-1,1-dicarbonitrile and 4-(4-Methoxyphenyl)-2,6-bis(methylthio)pyridine-3-carbonitrile. Mathew George, Suresh Das, C. V. Ashokan, Nigam P. Rath and M. V. George. *Acta Crystallographica*, **1998**, C54, 1033-6.
126. [(dippe)Pt]₂B₇H₁₁] An *arachno*-Bimetalanonaborane based on the uncommon n-B₉H₁₅ Cluster Framework. Ramon Macias, Nigam P. Rath and Lawrence Barton. *Chem. Commun.*, **1998**, 1081-2.
127. Macropolyhedral boron-containing cluster chemistry. Isolation and characterisation of the 27-vertex contiguous triple-cluster species [(PMe₂Ph)PtB₂₆H₂₆(PMe₂Ph)]. J. Bould, S. A. Barrett, L. Barton, N. P. Rath and John D. Kennedy. *Inorganic Chemistry Communications*, **1998**, 1, 365-7.
128. Polyhedral ruthenaborane chemistry. The ten-vertex *isocloso* cluster geometries of [(pcym)RuB₉H₉] and [(pcym)₂Ru₂B₈H₈]. Y-H Kim, P. A. Cooke, N. P. Rath, L. Barton, R. Greatrex, J. D. Kennedy and M. Thornton-Pett. *Inorganic Chemistry Communications*. **1998**, 1, 375-8.
129. An unusual cyanide-bridged extended A-frame complex: The molecular structure of Robert A. Jr. Stockland, Gordon K. Anderson, and Nigam P. Rath. *Inorg. Chim. Acta.*,

- 1998**,271, 236-8.
130. Nucleophilic attack on cyclooctadiene complexes of palladium: Stereochemistry of the resulting cyclooctenylpalladium derivatives. Gretchen R. Hoel, Robert A. Jr. Stockland, Gordon K. Anderson, Folami T. Ladipo, Janet Braddock-Wilking, Nigam P. Rath and Juan C. Mareque-Rivas. *Organometallics*, **1998**,17, 1155-65.
 131. The Synthesis, Structure and Properties of Homochiral Diazaphospholes: Reagents and Ligands for Asymmetric Synthesis. Antonette De la Cruz, Kevin J. Koeller, Nigam P. Rath, Christopher D. Spilling and Isabel Vasconcelos. *Tetrahedron*, **1998**, 54, 10513-24.
 132. Cyclooctatetraene tetraepoxides. Robert W. Murray, Megh Singh and Nigam P. Rath. *Tetrahedron Lett.*, **1998**, 39, 2899-2902.
 133. *Exo*- and *endo*-Tricarbonyl(4b,5,6,7,8,8a- η)-*cis*-*N*-Methyl-2,3,4,4a,9,9a-hexahydro-1*H*-carbazole) Chromium(0). F. Christopher Pigge, Nigam P. Rath and Shiyue Fang. *Acta Cryst.*, (Secn. C.), **1998**, C54, 1825-7.
 134. Structure and thermal isomerization of the adducts formed in the reaction of cyclohexyl isocyanide with dimethyl acetylenedicarboxylate. H. Junjappa, M. K. Saxena, D. Ramaiah, B. B. Loharay, N. P. Rath, M. V. George. *J. Org. Chem.*, **1998**, 9801-9805.
 135. Alkylation of (6-Arene)-Ru(II) Complexes: Construction of Benzylic Quaternary Carbon Centers. F. Christopher Pigge, Shiyue Fang and Nigam P. Rath. *Tet. Lett.*, **1999**, 559, 2251-4.
 136. Arene dioxides of substituted pyrenes: synthesis and x-ray structural studies. Robert W. Murray, Megh Singh and Nigam P. Rath. *Carcinogenesis*, **1999**, 20, 147-52.
 137. The Reaction of Cyclooctatetraene with Dimethoxydioxirane. Robert W. Murray, Megh Singh and Nigam P. Rath. *Tetrahedron*, **1999**, 55, 4539-58.
 138. Bis(diphenylphosphino)methanedinitratopalladium(II) Deuteriochloroform Solvate (1/3). Nigam P. Rath, Robert A. Stockland Jr. and Gordon K. Anderson. *Acta Cryst.*, C., **1999**, C55, 494-6.
 139. [8,8- η^2 -{ η^2 -(BH₃)Ph₂PCH₂PPh₂}-*nido*-8,7-RhSB₉H₁₀]: a rhodathiaborane with a novel *bidentate* chelating ligand, Ph₂PCH₂PPh₂BH₃. Ramón Macías, Nigam P. Rath and Lawrence Barton. *Angewandte Chemie, Int. Ed.*, **1999**, 38, 162-164.
 140. An approach to *megalo*-borane. Mixed and multiple cluster fusions involving iridaborane and platinaborane cluster compounds. Crystal structure determination by conventional and synchrotron methods. J. Bould, W. Clegg, S. J. Teat, L. Barton, N. P. Rath, M. Thornton-Pett and J. D. Kennedy. *Inorganica Chimica Acta*, **1999**, 289, 95-124.
 141. Improved Synthesis and X-Ray Crystallographic Structure Determination of the Stereoisomeric K-Region Arene Dioxides of Pyrene and Dibenz[*a,h*] Anthracene [1]. Robert W. Murray, Megh Singh and Nigam P. Rath. *Polycyclic Aromatic Compounds*. **1999**, 13, 139-149.
 142. Synthesis and characterization of a new dicage *ortho*-carborane with a supramolecular structure directed by intermolecular C-H_{carborane}...O bonds. Ramón Macías, Nigam P. Rath and Lawrence Barton. *J. Organomet. Chem.*, **1999**, 581, 39-44.

143. Regioselectivity in dibenzobarrelene photo-rearrangements: the photoproducts derived from 9-substituted-dibenzobarrelenes. M. Muneer, D. Ramaiah, E. S. Ajitkumar, M. C. Sajimon, Nigam P. Rath and M. V. George. *Acta Cryst*, **1999**, C55, 996-1000.
144. A New Inclusion Host: An Inclusion Complex Between a 1,3,5-triaroylbenzene Host and a Benzene Guest Stabilised by Aromatic C-H...O Hydrogen Bonds. F. Christopher Pigge, Fatemeh Ghasedi and Nigam P. Rath. *Tet. Letters*, **1999**, 40, 8045-8048.
145. Intramolecular Addition of Stabilised Enolates to (η^6 -Arene)ruthenium Complexes: Synthesis of Ru-coordinated Azaspirocycles. F. Christopher Pigge, Shiyue Fang and Nigam P. Rath. *Org. Lett.*, **1999**, 1(11), 1851-1854.
146. Organometallic chemistry on a metallaborane cluster: Reactions of [8,8-(PPh₃)₂-*nido*-8,7-RhSB₉H₁₀] with bidentate phosphine ligands. Ramón Macías, Nigam P. Rath and Lawrence Barton. *Organometallics*, **1999**, 18, 3637 - 3648.
147. Degradation and Modification of Metallaboranes: Reactions of the Hexaborane(10) Analogue *nido*-(PPh₃)₂(CO)OsB₅H₉ with Phosphines and the Crystal and Molecular Structure of [(PPh₃)₂(CO)OsB₅H₉(PMePh₂)]. Jonathan Bould, Hong Fang, Kevin Hupp, Paul McQuade, Nigam P. Rath, Rhodri L. Thomas, and Lawrence Barton. *Inorg. Chem.*, **1999**, 38, 5415-5424.
148. [(*p*-cym)RuCl₂PPh₂CH₂C₆H₄CH₂Ph₂P-BH₃]: A New Bifunctional Compound and Prototype of a Linked Borane/Metal Cluster Species. Paul McQuade, Nigam P. Rath and Lawrence Barton. *Inorg. Chem.*, **1999**, 38, 5468-5470.
149. B-frame-supported bimetallics. Isoelectronic *arachno*-structured [(PMe₂Ph)₄Pd₂B₈H₁₀] and *closo*-structured [(PMe₃)₄(CO)₂Ir₂B₈H₈]. Jonathan Bould, Paul A. Cooke, Udo Dörfler, John D. Kennedy, Lawrence Barton, Nigam P. Rath and Mark Thornton-Pett. *Inorganica Chimica Acta*, **1999**, 285, 290- 295.
150. 1,3-Dipolar Cycloaddition Reaction of Nitrile-N-oxides with 1,2-benzoquinones. V. Nair, K. V. Radhakrishnan, K. C. Sheela and N. P. Rath. *Tetrahedron*, **1999**, 55, 14199-14210.
151. X-ray Crystal Structures of some Arene Dioxides. Robert W. Murray, Megh Singh and Nigam P. Rath. *J. of Structural Chemistry*, **1999**, 10, 419-427.
152. Demethylation of trimethylphosphite promoted by dichlorodiphosphineplatinum and palladium complexes. Structures of the metallophosphonate complexes [Pt(P)P]{P(O)(OMe)₂}₂] (P)P = dppe, dppp). R. A. Stockland, Jr., D. L. Maher, G. K. Anderson and N. P. Rath. *Polyhedron*, **1999**, 18, 1067-1075.
153. Reductive elimination of alkanes and arenes from [Pd₂R₂(μ -H)(μ -dppm)₂]PF₆ complexes. R. A. Stockland, Jr., G. K. Anderson and N. P. Rath, *J. Am. Chem. Soc.*, **1999**, 121, 7945-6.
154. Diiodobis(diphenylphosphino)methaneplatinum(II), [PtI₂(dppm)]. M. J. Arendse, G. K. Anderson and N. P. Rath, *Acta Crystallogr., Sect. C*, **1999**, 55, IUC9900083.
155. Synthesis, Characterization and Reactivity of Titanium(IV) Complexes Supported by Proximally Bridged *p*-*tert*-Butylcalix[4]arene Ligands. Oleg V. Ozerov, Folami T. Iadipo and Nigam P. Rath. *Organometallics*, **1999**, 586, 223-233.

156. Hetero Diels-Alder Reaction of o-Benzoquinones with Tetracyclone: An Efficient Synthesis of Benzodioxinone Derivatives. V. Nair, B. Mathew, K. V. Radhakrishnan, N. P. Rath. *Tetrahedron*, **1999**, *55*, 11017-11026.
157. Synthesis, structure, spectroscopy and reactivity of a Metallathiabenzene. John R. Bleeke, Paul V. Hinkle and Nigam P. Rath. *J. Am. Chem. Soc.*, **1999**, *121*, 595-6.
158. Photoisomerization of bridgehead monosubstituted dibenzobarrelenes and interesting thermal isomerization of their photoproducts. M. C. Sajimon, D. Ramaiah, M. Muneer, E. S. Ajithkumar, N. P. Rath and M. V. George. *J. Org. Chem.*, **1999**, *64*, 6347-52.
159. Synthesis and characterization of platinum(II) complexes of L-ascorbic acid. Crystal Structures of ascorbato-C²,O⁵-ethylenediamineplatinum(II) dihydrate. M. J. Arendse, G. K. Anderson and N. P. Rath, *Inorg. Chem.*, **1999**, *38*, 5864-9.
160. Tris(triisopropylsilyl)silane and the generation of Bis(triisopropylsilyl)silylene. P. P. Gaspar, A. M. Beatty, T. Chen, T. Haile, J. Braddock-wilking, N. P. Rath, W. T. Klooster, T. F. Koetzle, S. A. Mason, A. Albinati. *Organometallics*, **1999**, *18*, 3921-32.
161. Synthesis and characterization of sterically hindered group IV metallocenes. Brian J. Grimmond, Joyce Y. Corey and Nigam P. Rath. *Organometallics*, **1999**, *18*, 404-12.
162. Reaction of symmetrical diplatinum complex containing bridging μ - η^2 -H-SiH(IMP) ligands (IMP= 2-isopropyl-6-methylphenyl) with Pme₂Ph. Formation and characterization of $\{(\text{PhM}_2\text{2P})_2\text{Pt}[\mu\text{-}\eta^2\text{-H-SiH(IMP)}]\}_2$. Yanina Levchinsky, Nigam P. Rath and Janet Braddock-Wilking. *Organometallics*, **1999**, *18*, 2583-6.
163. Phosphinidenes, phosphiranes, and their chalcogenides. P. P. Gaspar, A. M. Beatty, X. H. Lia, H. Qian, N. P. Rath, J. C. Watt. *Phosphorus, Sulfur, Silicon and the Related Elements*, **1999**, *146*, 277-280.
164. Synthesis and Characterization of Sterically Hindered Arylsilanes Containing the 2,4,6-trimethoxyphenyl ligand (TMP). X-ray structure of (TMP)SiH₃, (TMP)₂SiH₂ and (TMP)₃SiH. Janet Braddock-Wilking, Yanina Levchinsky and Nigam P. Rath. *Organometallics*, **1999**, *18*, 51-59.
165. Two fascinating rearrangements through selective placement of bromine substituents. Photochemical synthesis of 3-bromo-7-(bromomethyl) tetracyclo[5.3.1.0(2,6).0(4,8)] undec-10(12)-ene-9,11-dione and its rearrangement with amines. M. S. Nair, U. Sudhir, S. Joly, N. P. Rath. *Tetrahedron*, **1999**, 7653-7660.
166. 2,6-dimethoxyphenylphosphetane sulfide-synthesis, structure and exploratory photochemistry. H. Qian, P. P. Gaspar, N. P. Rath. *J. Organomet. Chem*, **1999**, 167-173.
167. Low-temperature, Catalyzed Growth of Indium Nitride Fibers from Azido-indium Precursors. Sean Sean D. Dingman, Nigam P. Rath, Paul D. Markowitz, Patrick C. Gibbons, and William E. Buhro. *Angewandte Chemie.*, **2000**, 1470-72.
168. A novel 3-component reaction of sarcosine and 1,2-diones. Vijay Nair, K. C. Sheela, Nigam P. Rath and Gunter K. Eigendorf. *Tetrahedron letters*, **2000**, *41*, 6217-6221.
169. Hetero Diels-Alder reactions of o-thioquinones with heterocyclic dienes. [Erratum to document cited in CA132: 166191]. Vijay Nair, Bini Mathew, K. V. Radhakrishnan,

- Nigam P. Rath. *Synlett*, **2000**, 4, 560.
170. 2,6-Dimethylphenylphosphirane Oxide and Sulfide and their thermolysis to Phosphinidene Chalcogenides- Kinetic and Mechanistic Studies. Peter P. Gaspar, Hu Qian, Alicia M. Beatty, D. Andre d'Avignon, Jeff L.-F Kao, Jesse C. Watt and Nigam P. Rath. *Tetrahedron*, **2000**, 56, 105-119.
171. Substituent Effects on Regioselectivity in the Photorearrangement of a few Naphthobarrelenes. M. C. Sajimon, D. Ramaiah, S. Ajay Kumar, Nigam P. Rath and M. V. George. *Tetrahedron*, **2000**, 56, 5421-5428.
172. 1,3,5-Triaroylbenzenes as Versatile Inclusion Hosts via C-H...O Hydrogen Bonding. F. Christopher Pigge, Zhanmiao Zheng and Nigam P. Rath. *New J. of Chemistry*, **2000**, 24, 183-185.
173. Macropolyhedral boron-containing cluster chemistry. Further progress beyond the icosahedron. Jonathan Bould, Daniel L. Ormsby, Hai-Jun Yao, Chun-Hua Hu, Jie Sun, Ruo-Shui Jin, Suzanne L. Shea, William Clegg, Tomas Jelinek, Nigam P. Rath, Mark Thornton-Pett, Robert Greatrex, Pei-Ju Zheng, Lawrence Barton, Bohumil Stibr, John D. Kennedy. *Special Publication - Royal Society of Chemistry*, **2000**, 253, Contemporary Boron Chemistry, 171-174.
174. The Reaction of Cyclohexyl Isocyanide and Dimethyl Acetylenedicarboxylate with o- and p-quinones: a novel synthesis of iminolactones. Vijay Nair, A. U. Vinod, J. Somarajan Nair, A. R. Sreekanth and Nigam P. Rath. *Tet. Letters*, **2000**, 41, 6675-6679.
175. Synthesis of N-substituted Derivatives of the hypho (amino)(amido)B8H11 System. Udo Dörfler, Claudia Bauer, Detlef Gabel, Nigam P. Rath, Lawrence Barton and John D. Kennedy, *Journal of Organometallic Chemistry*, **2000**, 215 - 222.
176. Steady state photolysis of bridgehead disubstituted dibenzobarrelenes and thermal isomerization of their photoproducts. M. C. Sajimon, D. Ramaiah, M. Muneer, Nigam P. Rath and M. V. George. *Journal of Photochemistry and Photobiology, A: Chemistry*, **2000**, 136, 209-218.
177. Structural characterization of crystalline inclusion complexes formed from 1,3,5-triaroylbenzene derivatives- a new family of inclusion hosts. F. Christopher Pigge, Fatemeh Ghasedi, Zhanmiao Zheng, Nigam P. Rath, Gary Nichols and James S. Chickos. *J. Chem. Soc., Perkin Trans. 2*, **2000**, 2458-2464.
178. $[\eta^5\text{-C}_5\text{H}_5]\text{TiCl}_2(\eta^5\text{-C}_5\text{H}_4\text{SiMe}_2)_2\text{O}(\text{R}=\text{H, Me})$. Brian J. Grimmond, Joyce Y. Corey and Nigam P. Rath. *Acta Cryst., Secn C.*, **2000**, 56, 53-55.
179. Discovery of chiral N,N-Disubstituted Trifluoro-3-Amino-2-propanols as Potent Inhibitors of Cholesteryl Ester Transfer Protein. Richard C. Durly, Margaret L. Grapperhaus, Mark A. Massa, Deborah A. Mischke, Barry L. Parnas, Yvette M. Fobian, Nigam P. Rath, Dorothy D. Honda, Ming Zeng, Daniel T. Connolly, Deborah A. Heuvelman, Bryan J. Witherbee, Kevin C. Glenn, Elaine S. Krul, Mark E. Smith and James A. Sikorski. *J. Med. Chem.*, **2000**, 30, 4575-8.
180. Enatiopure siloxy-functionalized group 4 metallocene dichlorides. Synthesis, characterization and catalytic dehydropolymerization of PhSiH₃. Brian J. Grimmond, Nigam P. Rath and Joyce Y. Corey. *Organometallics*, **2000**, 19, 2975-84.

181. Synthesis and structures of Platinum A-frame complexes. Mesfin Janka, Gordon K. Anderson and Nigam P. Rath. *Organometallics*, **2000**, *19*, 5071-6.
182. Synthesis and characterization of diplatinum complexes containing bridging μ - η^2 -H-SiHAr ligands. X-ray crystal structure determination of $\{[(\text{Ph}_3\text{P})\text{Pt}[\mu\text{-}\eta^2\text{-H-SiHAr}]]\}_2$ (Ar=2,4,6-(CF₃)₃C₆H₂, C₆H₅). J. Braddock-Wilking, Y. Levchinsky and N. P. Rath. *Organometallics*, **2000**, *19*, 5500-10.
183. Cycloaddition reactions of 2-oxo-2H-cyclohepta[b]furan derivatives with arylacetylenes and the di--methane rearrangement of homobarrelene derivatives. Vijay Nair , Mecheril Valsan Nandakumar , Gopinathan Nair Anilkumar , Davis Maliakal , Mariappanadar Vairamani , Sripadi Prabhakar and Nigam P. Rath. *J. Chem. Soc., Perkin Trans. 1*, **2000**, *22*, 3795 – 3798.
184. 1,3-Dipolar cycloaddition reaction of nitrile N-oxides to 6-(2-phenylethenyl)fulvene. V. Nair, M. V. Nandakumar, D. Maliakal, J. S. Mathen, N. P. Rath. *Tetrahedron*, **2000**, *40*, 8001-8005.
185. A facile photolytic approach to the synthesis of bicyclo[3.3.0]octa-3,7-diene-2,6-diones. V. Nair, D. Maliakal, G. Anilkumar, N. P. Rath. *Synlett.*, **2000**, *8*, 1139-1140.
186. Synthesis and structures of hydride-bridged palladium A-frame complexes. R. A. Stockland, Jr., G. K. Anderson and N. P. Rath. *Inorg. Chim. Acta*, **2000**, *300*, 395-405.
187. [4+2] cycloaddition reactions of o-benzoquinones with styrenes: A facile synthesis of bicyclo[2.2.2]octenediones. V. Nair, D. Maliakal, P. M. Treesa, N. P. Rath, G. K. Eigendorf. *Synthesis*, **2000**, *6*, 850-856.
188. Boron trifluoride-etherate induced rearrangement of bicyclo[2.2.2]octenediones An efficient synthesis of bicycle[3.2.1]octenediones. V. Nair, D. Maliakal, P. M. Treesa, G. Anilkumar, M. Vairamani, S. Prabhakar, N. P. Rath. *Tetrahedron*, **2000**, *23*, 3735-3741.
189. Hetero Diels-Alder reactions of o-thioquinones with heterocyclic dienes. V. Nair, B. Mathew, K. V. Radhakrishnan, N. P. Rath. *Synlett*, **2000**, *1*, 61-62.
190. Synthesis of N-substituted derivatives of the hypho-(amine)(amino)B₈H₁₁ system. Udo Dorfler, Claudia Bauer, Detlef Gabel, Nigam P. Rath, Lawrence Barton, John D. Kennedy. *J. Organomet. Chem.*, **2000**, *614-615*, 215-222.
191. Dipolar cycloaddition reactions of isatin derived azomethine ylides with 3,4-diphenylcyclobutene-1, 2-dione: Synthesis of novel spiro [pyrrolidine-2, 3'-oxindole] derivatives. V. Nair, K. C. Sheela, N. P. Rath. *Chem.Lett.* **2000**, 980-1.
192. Structural Studies of a non-covalently linked porphyrin-fullerene dyad. Francis D'Souza, Nigam P. Rath, Gollapoli R. Deviprasad and Melvin E. Zandler. *Chem. Commun.*, **2001**, 267-8.
193. [Ethylene-1,2-bis(diphenylphosphine)-P,P']dinitratoplatinum(II) and cis-bis[(diphenylphosphinomethyl)diphenylphosphine oxide-O,P]platinum(II) dinitrate dihydrate. Malcom J. Arendse, Gordon K. Anderson and Nigam P. Rath. *Acta Cryst, Secn C.*, **2001**, *C57*, 237-239.
194. Synthesis, Characterization, and X-ray Structural Analysis of Diplatinum Complexes Containing bridging μ -SiHAr ligands, $\{(\text{Ph}_n\text{Me}_{3-n}\text{P})_2\text{Pt}[\mu\text{-SiHAr}]\}_2$ [n = 0-2; Ar = 2-

- isopropyl-6-methyl(phenyl)]. J. Braddock-Wilking, Y. Levchinsky, and N. P. Rath. *Organometallics*, **2001**, 20, 474-480.
195. Silver(I) carboxylates: versatile inorganic analogs of carboxylic acids for supramolecular network formation. Lee Brammer, Michael D. Burgard, Colin S. Rodger, John K Swearingen, Nigam P Rath. *Chem. Commun.*, **2001**, 23, 2468-2469.
196. Isolation of a New Nonaborane Cluster Form: arachno-B₉H₁₁ (PPh₃)₂. Mitsuhiro Hata, Nigam P. Rath, Lawrence Barton. *Inorg. Chem.* **2001**, 40(26), 6852-6854.
197. The nido-osmaboranes [2,2,2-(CO)(PPh₃) 2-nido-2-OsB₅H₉] and [6,6,6-(CO)(PPh₃) 2-nido-6-OsB₉H₁₃]. Jonathan Bould, John D. Kennedy, Rhodri Ll. Thomas, Nigam P. Rath, Lawrence Barton. *Acta Crystallogr. (Sect. C)*, **2001**, C57 (11), 1245-1247.
198. Preparation of F(ArSiMe)₂F and Observation of Crystallization-Induced Asymmetric Transformation in meso-/rac-F(ArSiMe)₂F and Anion-Induced Epimerization of meso-F(ArSiMe)₂F. Kevin A. Trankler, Deborah S. Wyman, Joyce Y. Corey, Elaine E. Katz, Nigam P. Rath. *Organometallics*, **2001**, 20(24), 5139-5148.
199. Hetero Diels-Alder reactions of o-thioquinones with cyclic dienes: an efficient synthesis of novel heterocyclic compounds. V. Nair, B. Mathew, N. P. Rath, M. Vairamani, S. Prabhakar. *Tetrahedron*, **2001**, 57(39), 8349-8356.
200. Synthesis of novel tetra- and pentacyclic aza-cage systems. U. Sudhir, N. P. Rath, M. S. Nair, *Tetrahedron*, **2001**, 57(36), 7749-7753.
201. Diels-Alder trapping of 3-methylenequinoline-2, 4-dione: a facile synthesis of pyranoquinolinones and spiroquinolinediones. V. Nair, P. M. Treasa, C. N. Jayan, N. P. Rath, M. Vairamani, S. Prabhakar. *Tetrahedron*, **2001**, 57(36), 7711-7717.
202. CAN Mediated oxidative addition of 2-hydroxynaphthoquinone to dienes: a facile synthesis of naphthofurandiones. V. Nair, P. M. Treasa, D. Maliakal, N. P. Rath. *Tetrahedron*, **2001**, 57(36), 7705-7710.
203. Oxidative cyclization of cinnamyl ethers mediated by CAN: a stereoselective synthesis of 3,4-trans disubstituted tetrahydrofuran derivatives. Vijay Nair, Lakshmi Balagopal, V. Sheeba, Sreeletha B. Panicker, Nigam P. Rath. *Chem. Commun.* **2001**, 17, 1682-1683.
204. Oxidative degradation of the ascorbate anion in the presence of platinum and palladium. Formation and structures of platinum and palladium oxalate complexes. M. J. Arendse, G. K. Anderson, N. P. Rath. *Polyhedron*, **2001**, 20(19), 2495-2503.
205. [4+2] Cycloaddition reactions of coumarin quinone methide with pentafulvenes: facile synthesis of novel polycyclic pyran derivatives. V. Nair, C. N. Jayan, K. V. Radhakrishnan, G. Anilkumar, N. P. Rath. *Tetrahedron*, **2001**, 57(27), 5807-5813.
206. Synthesis, Structure, Spectroscopy, and Reactivity of a Metallathiabenzene. John R. Bleeke, Paul V. Hinkle, Nigam P. Rath. *Organometallics*, **2001**, 20(10), 1939-1951.
207. Computer-Aided Design (CAD) of Mn (II) Complexes: Superoxide Dismutase Mimetics with Catalytic Activity Exceeding the Native Enzyme. Karl Aston, Nigam Rath, Arati Naik, Urszula Slomczynska, Otto F. Schall, Dennis P. Riley. *Inorg. Chem.*, **2001**, 40(8), 1779-1789.

208. Cycloaddition of carbonyl ylides to isatins: synthesis of novel spiro oxindoles. Vijay Nair, K. C. Sheela, D. Sethumadhavan, S. Bindu, Nigam P. Rath, Gunter K. Eigendorf. *Synlett*, **2001**, 2, 272-274.
209. Two iridanonaborane compounds. J. Bould, J. D. Kennedy, M. Thornton-Pett, L. Barton and N. P. Rath. *Acta Cryst.*, **2001**, C57, 49-51.
210. General Route to Halide-Bridged Organopalladium A-frame Complexes and Studies of Reductive Elimination from These Bimetallic Systems. Robert A. Stockland, Jr. Mesfin Janka, Gretchen R. Hoel, Nigam P. Rath and Gordon K. Anderson. *Organometallics*, **2001**, 20, 5212-5219.
211. Formation of Metallaboranes from the Group IV Transition Metals and Pentaborane (9): Crystal and Molecular Structure of $[(Cp_2Zr)_2B_5H_8][B_{11}H_{14}]$. Rhodri Ll. Thomas, Nigam P. Rath, Lawrence Barton. *Inorganic Chemistry*, **2002**, 41, 67-75
212. Formation of $[8,8-\eta^2-(\mu-Cl)_2Ru(\eta^6-p-cym)Ph_2PCH_2PPh_2]-nido-8,7-RhSB_9H_{10}]$, a bimetallic derivative of the novel species $[8,8-(\eta^2-dppm)-8-(\eta^1-dppm)-nido-8,7-RhSB_9H_{10}]$. Oleg Volkov, Nigam P. Rath and Lawrence Barton *Inorganic Chemistry Communications*, **2002**, 5, 127-129.
213. Lewis Acid Promoted Annulation of p-Quinoneimines by Allylsilanes: A Facile Entry into Benzofused Heterocycles. Vijay Nair, C. Rajesh, R. Dhanya and Nigam P. Rath. *Org. Letters*, **2002**, 4(6), 953-955.
214. A CAN-Induced Cyclodimerization-Ritter Trapping Strategy for the One-Pot Synthesis of 1-Amino-4-aryltetralins from Styrenes. Vijay Nair, Roshini Rajan and Nigam P. Rath. *Org. Letters*, **2002**, 4(9), 1575-1577.
215. Reactivity of $\{(Ph_3P)Pt[\mu-\eta^2-H-SiH(Ar)]\}_2$ (Ar = 2-isopropyl-6-methylphenyl) with Phosphines. X-ray Crystal Structure of trans- $\{(dppe)Pt[\mu-SiH(Ar)]\}_2$. Janet Braddock-Wilking, Yanina Levchinsky, and Nigam P. Rath. *Inorganica Chimica Acta*, **2002**, 330, 82-88.
216. Designing neutral coordination networks with the aid of hydrogen bond mimicry using silver(I) carboxylates. L. Brammer, M. D. Burgard, M. D. Eddleston, C. S. Rodger, N. P. Rath and H. Adams, *Cryst. Eng. Comm.*, **2002**, 4, 239-248.
217. Indium/indium trichloride mediated pinacol cross-coupling reaction of aldehydes and chalcones in aqueous media: a facile stereo selective synthesis of substituted but-3-ene-1, 2-diols. V. Nair, Ros Sindu, C. N. Jayan, N. P. Rath. *Tetrahedron Letters*, **2002**, 8967-9.
218. Chiral N,N-Disubstituted Trifluoro-3-Amino-2-Propanols Are Potent Inhibitors of Cholesteryl Ester Transfer Protein. Richard C. Durley, Margaret L. Grapperhaus, Brian S. Hickory, Mark A. Massa, Jane L. Wang, Dale P. Spangler, Deborah A. Mischke, Barry L. Parnas, Yvette M. Fobian, Nigam P. Rath, Dorothy D. Honda, Ming Zeng, Daniel T. Connolly, Deborah M. Heuvelman, Bryan J. Witherbee, Michele A. Melton, Kevin C. Glenn, Elaine S. Krul, Mark E. Smith, James A. Sikorski. *J. Med. Chem.*, **2002**, 45, 3891-3904.
219. Structural Chemistry of arachno-Nonaboranes. Jonathan Bould, Robert Greatrex, John D. Kennedy, Daniel L. Ormsby, Michael G. S. Londesborough, Karen L. F. Callaghan, Mark Thornton-Pett, Trevor R. Spalding, Simon J. Teat, William Clegg, Hong Fang, Nigam P. Rath, Lawrence Barton. *J. Am. Chem. Soc.*, **2002**, 124, 7429-7439.

- Note: [Erratum for J. Am. Chem. Soc. 2002, 124, 7429-7439]. Jonathan Bould, Robert Greatrex, John D Kennedy, Daniel L. Ormsby, Michael G. S Londesborough, Karen L. F. Callaghan, Mark Thornton-Pett, Trevor R. Spalding, Simon J. Teat, William Clegg, Hong Fang, Nigam P. Rath, Lawrence Barton, *J. Am. Chem. Soc.*, **2002**, 124, 9955.
220. Formal dipolar cycloadditions of allylsilanes to *o*-quinonoid compounds: a convenient route to benzofused and spirofused heterocycles. V. Nair, C. Rajesh, R. Dhanya, N. P. Rath. *Tetrahedron Letters*, **2002**, 43, 5349-51.
221. SnCl₄ Catalyzed reaction of *o*-benzoquinones and aryl acetylenes: An unprecedented one-pot synthesis of Tropone derivatives. V. Nair, D. Sethumadhavan, S. M. Nair, N. P. Rath, G. K. Eigendorf. *J. Org. Chem.* **2002**, 67, 7533-7536.
222. Chemistry on the rhodacarborane cluster [9,9-(PPh₃)-nido-9, 7,8-RhC₂B₈H₁₁]: formation of bidentate phosphine and bimetallic derivatives. Oleg Volkov, Nigam P. Rath and Lawrence Barton. *Collection of Czechoslovak Chemical Communications*, **2002**, 67, 769-782.
223. Dipolar cycloaddition of carbonyl ylides to 2-oxoindolinylienes: a facile approach towards the synthesis of functionalized spiroindolenins. V. Nair, P. M Treasa, N. P. Rath, A. C. Kunwar, K. S. Kirankumar, A. Ravisankar, M. Vairamani, S. Prabhakar. *Tetrahedron*, **2002**, 58, 7221-31.
224. Reaction of Nitrile Ylides with Isatins and *o*-Benzoquinones: Formation of Novel Spirooxazoline Derivatives. V. Nair, D. Sethumadhavan, S. M. Nair, S. Viji, N. P. Rath. *Tetrahedron*, **2002**, 58, 3003-7.
225. 1,3-dipolar cycloadditions reactions of carbonyl ylides with 1,2-diones: synthesis of novel spiro oxabicycles. V. Nair, K. C. Sheela, D. Sethumadhavan, R. Dhanya, N. P. Rath. *Tetrahedron*, 58, **2002**, 4171-4177.
226. Chemistry of a Metallathiaborane Cluster: 5. Reaction of [8,8-(η²-dppm)-8-(η¹-dppm)-nido-8, 7-RhSB₉H₁₀] and Its Derivatives with Organotransition-Metal Reagents. Oleg Volkov, Nigam P. Rath, Lawrence Barton. *Organometallics*, **2002**, 21(25), 5505-5514.
227. Formation and X-ray Crystal Structure Determination of the Novel Triplatinum Cluster [(Ph₃P)Pt(μ-SiC₁₂H₈)]₃ from Reaction of Silafluorene with (Ph₃P)₂Pt(η²-C₂H₄). Janet Braddock-Wilking, Joyce Y. Corey, Kimberly Dill, Nigam P. Rath. *Organometallics*, **2002**, 21(25), 5467-5469.
228. Chemistry on a metallathiaborane cluster Part 4: reactions of 11-vertex rhodathiaboranes with bidentate phosphines and their subsequent rearrangements. Oleg Volkov, Ramon Macias, Nigam P. Rath, Lawrence Barton. *J. Organomet. Chem.*, **2002**, 657, 40-47.
229. Phosphine-Boranes as Bidentate Ligands: Formation of [8,8-η²-{η²-(BH₃)-dppm}-nido-8,7-RhSB₉H₁₀] and [9,9-η²-{η²-(BH₃)-dppm}-nido-9,7,8-RhC₂B₈H₁₁] from [8,8-(η²-dppm)-8-(η¹-dppm)-nido-8,7-RhSB₉H₁₀] and [9,9-(η²-dppm)-9-(η¹-dppm)-nido-9,7,8-RhC₂B₈H₁₁]. Oleg Volkov, Ramon Macias, Nigam P. Rath, Lawrence Barton. *Inorganic Chemistry*, **2002**, 41(22), 5837-5843.
230. Synthesis and reactions of platinum (IV) complexes with sodium ascorbate. Malcolm J Arendse, Gordon K Anderson, Raquel N Majola, Nigam P. Rath. *Inorganica Chimica Acta*, **2002**, 340, 65-69.

231. Pentadienyl-Metal-Phosphine Chemistry. Part 31. Oxapentadienyl-Rhodium-Phosphine Chemistry. John R. Blecke, Edward Donnay, Nigam P. Rath. *Organometallics*, **2002**, *21*, 4099-4112.
232. Bimetallic platinum complexes containing linear tetrphosphine ligands. Padma Nair, Gordon K. Anderson, Nigam P. Rath. *Inorganic Chemistry Communications*, **2002**, *5*, 653-656.
233. An Enaminone-Directed Benzannulation/Macrocyclization Approach to Cyclophane Ring Systems. F. Christopher Pigge, Fatemeh Ghasedi, Nigam P. Rath. *Journal of Organic Chemistry*, **2002**, *67*, 4547-4552.
234. The enantiomer of Progesterone (ent-Progesterone) is a competitive inhibitor of human cytochromes P450c17 and P450c21. Richard J. Auchus, A. Sampeth Kumar, C. Andrew Boswell, Kristen Bruce, Manisha K. Gupta, Nigam P. Rath and Douglas F. Covey. *Archives of Biochemistry and Biophysics*, **2003**, *409(1)*, 134-144.
235. Organometallic chemistry on rhodaheteroborane clusters: reactions with bidentate phosphines and organotransition metal reagents. Oleg Volkov, Ramón Macías, Nigam P. Rath, Lawrence Barton. *Appl. Organomet. Chem.*, **2003**, *17*, 409-420.
236. The Enthalpies of Formation of Two Dibenzocyclooctadienones. S. Perisanua, I. Contineanu, M. D. Banciu, J. F. Liebman, B. S. Farivar, M. A. Mullan, J. S. Chickos, N. P. Rath, D. M. Hillesheim. *Thermochim. Acta*, **2003**, 109-120.
237. Transition metal complexes containing $P(C_6H_5)(C_6H_4Cl-2)_2$. The effect of added Lewis bases as a probe for substitution reactions occurring in ambient temperature Suzuki couplings catalyzed by Pd/ $P(C_6H_5)(C_6H_4Cl-2)_2$. Joshua J. Stone, Robert A. Stockland Jr., and Nigam P. Rath. *Inorganica Chimica Acta*, **2003**, *342*, 236-240.
238. The Reaction of Isoquinoline and Dimethyl Acetylenedicarboxylate with 1,2- and 1,4-diones: A novel Synthesis of spiro [1,3-oxazino] isoquinolines. V. Nair, A. R. Sreekanth, A. T. Biju, N. P. Rath. *Tetrahedron Letters*, **2003**, 729-732.
239. Unprecedented Reactivity of N-Heterocyclic Carbenes towards DMAD and Aldehydes leading to Novel Multicomponent Reactions. V. Nair, S. Bindu, V. Sreekumar, N. P. Rath. *Organic Letters*, **2003**, 665-667.
240. Palladium and Platinum Complexes Containing the Linear Tetrphosphine Bis[$((diphenylphosphino)ethyl)phenylphosphino$]methane. Padma Nair, Gordon K. Anderson, Nigam P. Rath. *Organometallics*, **2003**, *22*, 1494-1502.
241. 1,3,5-Triarylbenzenes as Ligands: Synthesis and Characterization of Three New Coordination Polymers from the Tritopic Ligand 1,3,5-Tris(4,4',4''-tricyanobenzoyl) benzene and $Ag(I)X$ ($X = OSO_2CF_3$, BF_4 , or PF_6). F. Christopher Pigge, Michael D. Burgard, Nigam P. Rath. *Crystal Growth & Design*, **2003**, *3*, 331-337.
242. Synthesis of a New Tetrapyridyl Ligand and the Characterization of Three Distinct Metal- and Hydrogen-Bonding Conformations. Eric Bosch, Nate Schultheiss, Nigam Rath, Marcus Bond. *Crystal Growth & Design*, **2003**, *3*, 263-266.

243. Functionalization of the macropolyhedral borate anion cluster $[B_{22}H_{22}]_2^-$: isolation and characterization of the OH and OEt derivatives. O. Volkov, N. P. Rath, L. Barton. *J. Organomet. Chem.*, **2003**, 212-217.
244. Oxidative Demetalation of Cyclohexadienyl Ruthenium (II) Complexes: A Net Ru-Mediated Dearomatization. F. Christopher Pigge, John J. Coniglio, Nigam P. Rath. *Org. Letters*, **2003**, 2011-2014.
245. Chemoselective 1,3-dipolar cycloaddition reactions of rhodium (II)-generated isomuenchnones with 1,4-quinones: Synthesis of novel azapolycycles. Vijay Nair, V. Santhi, K. C. Sheela, K. V. Radhakrishnan, Nigam P. Rath. *Synthesis*, **2003**, 1559-1564.
246. Metal Insertion into the Open Face of an Isonido-Metallathiaborane Cluster: Formation and Characterization of $[2-PPh_3-2,3-Cl_2-2,3-(\mu-Cl)-3,7-(\mu-dppm)-closo-2,3,1-Rh_2SB_9H_8]$ from $[1-PPh_3-\{1,3-(\mu-dppm)\}-isonido-1,2-RhSB_9H_8]$. Oleg Volkov, Nigam P. Rath, Lawrence Barton. *Organometallics*, **2003**, 2548-2550.
247. Reactions of boranes and metallaboranes with phosphines. Lawrence Barton, Oleg Volkov, Mitsuhiro Hata, Paul McQuade and Nigam P. Rath, *Pure and Applied Chemistry*, **2003**, 75, 1165-1173.
248. Concomitant polymorphism and architectural isomerism in 1,3,5-tris(4-cyanobenzoyl) benzene. V. S. Senthil Kumar, F. Christopher Pigge and Nigam P. Rath. *New J. of Chemistry*, **2003**, 27, 1554-1556.
249. Neurosteroid Analogues. 9. Conformationally Constrained Pregnanes: Structure–Activity Studies of 13,24-Cyclo-18,21-dinorcholane Analogues of the GABA Modulatory and Anesthetic Steroids (3,5)- and (3,5)-3-Hydroxypregnan-20-one. Xin Jiang, Brad D. Manion, Ann Benz, Nigam P. Rath, Alex S. Evers, Charles F. Zorumski, Steven Mennerick and Douglas F. Covey. *J. Med. Chem.*, **2003**, 5334-5348.
250. Novel pyridine-catalyzed reaction of dimethyl acetylenedicarboxylate with aldehydes and N-tosylimines: Efficient synthesis of 2-benzoylfumarates and 1-azadienes. Vijay Nair, A. R. Sreekanth, N. Abhilash, A. T. Biju, B. Rema Devi, Rajeev S. Menon, Nigam P. Rath, R. Srinivas. *Synthesis*, **2003**, 1895-1902.
251. A facile three-component reaction of dicarbomethoxycarbene, aldehydes and o-quinones: synthesis of novel spiro-dioxolanes. Vijay Nair, Sindhu Mathai, Smitha M Nair, Nigam P. Rath. *Tet. Letters*, **2003**, 8407-8409.
252. Halide induced epimerization of meso-1,2-dihalo-1,2-diaryl-1,2-dimethyldisilanes. Kevin A Trankler, Joyce Y. Corey,. Nigam P. Rath. *J. Organomet. Chem.*, **2003**, 66-74.
253. Approaches to bi- and trimetallic platinum and palladium complexes using the DPPEPM ligand. Padma Nair, Gordon K. Anderson, Nigam P. Rath. *Inorganic Chemistry Communications*, **2003**, 1307-1310.
254. Oligomerization of dialkylazidogallium compounds: a structural and solution-phase study. Sean D. Dingman, Nigam P Rath, William E. Buhro. *JCS, Dalton Transactions*, **2003**, 3675-3679.
255. Appended 1,2-naphthoquinones as anticancer agents I: synthesis, structural, spectral and antitumor activities of ortho-naphthaquinone thiosemicarbazone and its transition metal complexes. Zahra Afrasiabi, Ekkehard Sinn, Junnan Chen, Yinfa Ma, Arnold L.

- Rheingold, Lev N.Zakharov, Nigam Rath, Subhash Padhye. *Inorganica Chimica Acta*, **2004**, 357(1), 271-278.
256. CAN mediated cyclization of epoxypropyl cinnamyl ethers: a facile stereoselective synthesis of tetrahydropyran derivatives. Vijay Nair, Lakshmi Balgopala, Roshini Rajan, Ani Deepthi, Kishor Mohanan and Nigam P. Rath. *Tet. Letters*, **2004**, 2413-16.
257. Thermally reversible fluorescent polymorphs of alkoxy-cyano-substituted diphenylbutadienes: role of crystal packing in solid state fluorescence. Riju Davis, Nigam P. Rath and Suresh Das. *Chem. Commun.*, **2004**, 74-75.
258. C-H...O Hydrogen bonding induced guest inclusion and supramolecular isomerism in 1,3,5-tris(4-cyanobenzoyl)benzene: A neutral organic clay mimic. V. S. Senthil Kumar, F. Christopher Pigge and Nigam P. Rath. *Cryst. Growth & Des* **2004**, 651-653.
259. New Derivatives of [NHMe₃][7-Me-μ-(9,10-HMeC)-nido-7-CB₁₀H₁₀]. Jonathan Bould, Anna Laromaine, Clara Vinas, Francesc Texidor, Lawrence Barton, Nigam P. Rath, Rudolph E. K. Winter, Raikko Kivekas and Reijo Sillanpaa. *Organometallics*, **2004**, 23, 3335-3342.
260. Synthesis of Neutral Molecular Squares Composed of Bis(phosphine)platinum Corner Units and Dialkynyl Linkers. Solid-State Characterization of [Pt(μ-C≡C-C≡C)(dppp)]₄. Mesfin Janka, Gordon K Anderson, Nigam P. Rath. *Organometallics*, **2004**, 23, 4382-4390.
261. Metallocyclohexadiene and Metallabenzene Chemistry. Part 18. Synthesis, Structure, Spectroscopy, and Reactivity of a Neutral Iridathiabenzene. John R. Bleeke, Paul V. Hinkle, Monica Shokeen, Nigam P. Rath. *Organometallics*, **2004**, 23, 4139-4149.
262. Palladium(II) and platinum(II) complexes with polypyridylbenzene ligands. Mesfin Janka, Gordon K. Anderson, Nigam P Rath. *Inorganica Chimica Acta*, **2004**, 357(8), 2339-2344.
263. Polymorphism in 1,3,5-triaroylbenzenes: structural characterization of concomitant polymorphs obtained from 1,3,5-tris(4-chlorobenzoyl)benzene. V. S. Senthil Kumar, F. Christopher Pigge, Nigam P. Rath. *CrystEngComm*, **2004**, 6, 102-105.
264. Novel pyridine-catalyzed reactions of dimethyl acetylenedicarboxylate (DMAD) and arylmethylidenemalononitriles: a stereoselective synthesis of highly substituted buta-1, 3-dienes. Vijay Nair, B. Rema Devi, N. Vidya, Rajeev S. Menon, N. Abhilash, Nigam P. Rath. *Tetrahedron Letters*, **2004**, 45(16), 3203-3205.
265. Isopropyl 2,4,6-triisopropylphenyl sulfone: an aryl sulfone with unusual atom deviations from the aromatic least-squares plane. Paul B.Sandrock, Cal Y Meyers, Nigam P. Rath, Paul D.Robinson. *Acta Crystallographica*, Section E, **2004**, E60 (4), o544-o546.
266. Formation of highly caged compounds through Diels Alder cycloaddition of 3-bromo-7-(bromomethyl)tetracyclo[5.3.1.0_{2,6}.0_{4,8}]undeca-10(12)-ene-9,11-dione with itself and with cyclopentadiene. Uma Sudhir, S. Joly, Beena James, Mangalam S.Nair, and Nigam P. Rath. *Research on Chemical Intermediates*, **2004**, 30(3), 247-252.
267. Functionalized Spiro- and Fused-Ring Heterocycles via Oxidative Demetalation of Cyclohexadienyl Ruthenium Complexes. F. C. Pigge, J. J. Coniglio, N. P. Rath. *J. Org. Chem.* **2004**, 69(4), 1161-1168.

268. Otopetrin 1 is required for otolith formation in zebrafish *Danio rerio*. Inna Hughes, Brian Blasiole, David Huss, Mark Warchol, Nigam P. Rath, Belen Hurle, Elena Ignatova, J. David Dickman, Ruediger Thalmann, Robert Levenson, David M. Ornitz. *Developmental Biology*, **2004**, 276, 391-402.
269. Matching of host and guest symmetry in crystalline lattice inclusion complexes of the triaroylbenzene derivative 1,3,5-tris(3-methoxybenzoyl)benzene. V. S. Senthil Kumar, F. Christopher Pigge, Nigam P. Rath. *CrystEngComm*, **2004**, 531-534.
270. Synthesis of nonracemic allylic hydroxy phosphonates via alkene cross metathesis. Anyu He, Bingli Yan, Anchalee Thanavaro, Christopher D. Spilling, Nigam P. Rath. *J. Org. Chem.*, **2004**, 69, 8643-51.
271. Concomitant Polymorphism in a Spirobicyclic Dione. V. S. Senthil Kumar, K. C. Sheela, Vijay Nair, and Nigam P. Rath. *Cryst. Growth & Des* **2004**, 4, 1245-1247.
272. Polymorphism and Pseudopolymorphism in the Triaroylbenzene Derivative 1,3,5-Tris(4-cyanobenzoyl)benzene. V. S. Senthil Kumar, F. Christopher Pigge, Nigam P. Rath. *Crystal Growth & Design*, **2004**, 4, 1217-1222.
273. Reaction of Silafluorenes with $(\text{Ph}_3\text{P})_2\text{Pt}(\eta^2\text{-C}_2\text{H}_4)$: Generation and Characterization of Pt-Si Monomers, Dimers, and Trimers. Janet Braddock-Wilking, Joyce Y. Corey, Kevin A. Trankler, Kimberly M. Dill, Lisa M. French, Nigam P. Rath. *Organometallics*, **2004**, 23, 4576-4584.
274. Interpenetration of distinct 2D and 3D organic networks in the crystal structure of 1,3,5-tris(4-methylbenzoyl)benzene. V. S. Senthil Kumar, F. Christopher Pigge, Nigam P. Rath. *New Journal of Chemistry*, **2004**, 28, 1192-1194.
275. Observation of a Non-Conventional Horner-Wadsworth-Emmons Olefination Product and Effect of the Lateral Ethyl Substitution on their Solid State Fluorescence. Riju Davis, Shibu Abraham, Nigam P. Rath and Suresh Das. *New J. Chem*, **2004**, 28, 1368-1372.
276. A Novel Strategy for Oligosaccharide Synthesis via Temporarily Deactivated S-Thiazolyl Glycosides as Glycosyl Acceptors. Papapida Pornsuriyasak, Umesh B. Gangadharmath, Nigam P. Rath, Alexei V. Demchenko. *Organic Letters*, **2004**, 6, 4515-4518.
277. Reactions of boranes and metallaboranes with phosphines. L. Barton, O. Volkov, M. Hata, P. McQuade, N. P. Rath. *Boron Chemistry at the Beginning of the 21st Century*, [Proceedings of the International Conference on the Chemistry of Boron], **2003**, 210-217.
278. Synthesis, structure and spectroscopy of (Thiapentadienyl)rhodium phosphine complexes. John R. Bleeke, Eric S. Wise, Monica Shokeen and Nigam P. Rath. *Organometallics*, **2005**, 24, 805-808.
279. Degradation and modification of metallaboranes. Part 4: Synthesis and characterization of a series of hybrid bimetallaborane clusters of the type $[2,2,2\text{-}(\text{PPh}_3)_2(\text{CO})\text{-nido-2-OsB}_4\text{H}_7\text{-3-(BH}_2\text{PPh}_2)\text{C}_x\text{H}_y\text{PPh}_2\text{RuCl}_2(\text{p-cym})]$. Paul McQuade, Rudolph E. K. Winter, Nigam P. Rath, Lawrence Barton. *Inorg. Chimica Acta*, **2005**, 358, 1545-1556.
280. Halogenated rhenacarboranes: optoelectronic behavior of the iodinated rhenacarborane complex anion $[3,3,3\text{-}(\text{CO})_3\text{-8-}I\text{-closo-3,1,2-ReC}_2\text{B}_9\text{H}_{10}]^-$. Matthew J Fischer, Paul A.

- Jelliss, Lisa M. Phifer, Nigam P. Rath. *Inorganica Chimica Acta*, **2005**, 358, 1531-1544.
281. A stereoselective synthesis of spiro-dioxolanes via the multicomponent reaction of dicarbomethoxycarbene, aldehydes and 1,2- or 1,4-diones. Vijay Nair, Sindhu Mathai, Smitha C. Mathew, Nigam P. Rath. *Tetrahedron*, **2005**, 61, 2849-2856.
282. Fenofibric acid. Nigam P. Rath, Wahajul Haq, Ganesaratnam K. Balendiran. *Acta Crystallographica, Section C*: **2005**, C61, o81-o84.
283. Antitumor Metallothiosemicarbazones: Structure and Antitumor Activity of Palladium Complex of Phenanthrenequinone Thiosemicarbazone. Subhash Padhye, Zahra Afrasiabi, Ekk Sinn, Jansina Fok, Kapil Mehta, Nigam Rath. *Inorganic Chemistry*, **2005**, 44, 1154-1156.
284. Polyhedral ruthenaborane chemistry. Approaches to encapsulated boron cores. The isolation and characterisation of the partially encapsulated isocloso 10-vertex {RuB₉} cluster compound [(PPh₃)RuB₉H₉{RuCl₂(PPh₃)₂}₂]. Young-Hee Kim, Lawrence Barton, Nigam P. Rath, John D. Kennedy. *Inorganic Chemistry Communications*, **2005**, 147-150.
285. First Synthesis of Enantiopure 1,6-Difunctionalized Dodecahydrobenz[f]indenes. Jamie B. Scaglione, Nigam P. Rath, Douglas F. Covey. *Journal of Organic Chemistry*, **2005**, 70, 1089-1092.
286. N,N',N''-Tris(p-methoxyphenyl)phosphoric triamide. Chenguang Li, Daniel J. Dyer, Nigam P. Rath, Paul D. Robinson. *Acta Crystallographica, Section C: Crystal Structure Communications*, **2005**, C61 (11), o654-o656.
287. Influence of Halide Ion and Lewis Acid in the Demetalation of a Spirolactam Cyclohexadienyl Ruthenium Complex. F. Christopher Pigge, John J. Coniglio, Nigam P. Rath. *Organometallics*, **2005**, 24(22), 5424-5430.
288. Electrophilic substitution reactions of trisheteroarylmethanes: an efficient strategy to develop novel synthons for organic synthesis. Vijay Nair, Siji Thomas, Smitha C. Mathew, N. Vidya, Nigam P. Rath. *Tetrahedron*, **2005**, 61(40), 9533-9540.
289. A novel electron-transfer mediated reaction leading to lepidopterene. Jean J. Vadakkan, Rekha R. Mallia, Sreedharan Prathapan, Nigam P. Rath, Perupparampil A. Unnikrishnan, *Tetrahedron Letters*, **2005**, 46(35), 5919-5922.
290. Discovery of Potent, Nonsystemic Apical Sodium-Codependent Bile Acid Transporter Inhibitors (Part 1). Samuel J. Tremont, Len F. Lee, Horng-Chih Huang, Bradley T. Keller, Shyamal C. Banerjee, Scott R. Both, Andrew J. Carpenter, Ching-Cheng Wang, Danny J. Garland, Wei Huang, Claude Jones, Kevin J. Koeller, Steve A. Kolodziej, James Li, Robert E. Manning, Matthew W. Mahoney, Raymond E. Miller, Deborah A. Mischke, Nigam P. Rath, Theresa Fletcher, Emily J. Reinhard, Michael B. Tollefson, William F. Vernier, Grace M. Wagner, Steve R. Rapp, Judy Beaudry, Kevin Glenn, Karen Regina, Joe R. Schuh, Mark E. Smith, Jay S. Trivedi, David B. Reitz. *Journal of Medicinal Chemistry*, **2005**, 48(18), 5837-5852.
291. Discovery of Potent, Nonsystemic Apical Sodium-Codependent Bile Acid Transporter Inhibitors (Part 2). Horng-Chih Huang, Samuel J. Tremont, Len F. Lee, Bradley T. Keller, Andrew J. Carpenter, Ching-Cheng Wang, Shyamal C. Banerjee, Scott R. Both, Theresa Fletcher, Danny J. Garland, Wei Huang, Claude Jones, Kevin J. Koeller, Steve

- A. Kolodziej, James Li, Robert E. Manning, Matthew W. Mahoney, Raymond E. Miller, Deborah A. Mischke, Nigam P. Rath, Emily J. Reinhard, Michael B. Tollefson, William F. Vernier, Grace M. Wagner, Steve R. Rapp, Judy Beaudry, Kevin Glenn, Karen Regina, Joe R. Schuh, Mark E. Smith, Jay S. Trivedi, David B. Reitz. *Journal of Medicinal Chemistry*, **2005**, 48(18), 5853-5868.
292. Reaction of Diphenylgermane with $(\text{Ph}_3\text{P})_2\text{Pt}(\eta\text{-}2\text{-C}_2\text{H}_4)$: Generation of Mono- and Dinuclear Complexes Containing Pt-Ge Bonds. X-ray Crystal Structure Determination of $[(\text{Ph}_3\text{P})\text{Pt}(\mu\text{-}\eta\text{-}2\text{-H-GePh}_2)]_2$. Janet Braddock-Wilking, Joyce Y. Corey, Colin White, Huan Xu, Nigam P. Rath. *Organometallics*, **2005**, 24(17), 4113-4115.
293. Efficient Synthesis of Tyrosine-Derived Marine Sponge Metabolites via Acylation of Amines with a Coumarin. J. Jonathan Harburn, Nigam P. Rath, Christopher D. Spilling. *Journal of Organic Chemistry*, **2005**, 70(16), 6398-6403.
294. Similar luminescent behavior in an established rhenacarborane complex, $[3,3\text{-}(\text{CO})_2\text{-}3\text{-NO-closo-}3,1,2\text{-ReC}_2\text{B}_9\text{H}_{11}]$ and a new complex anion, $[3,3,3\text{-}(\text{CO})_3\text{-}8\text{-I-closo-}3,1,2\text{-ReC}_2\text{B}_9\text{H}_{10}]^-$. Matthew J. Fischer, Paul A. Jelliss, Justin H. Orlando, Lisa M. Phifer, Nigam P. Rath. *Journal of Luminescence*, **2005**, 114(1), 60-64.
295. Cubane, Cuneane, and Their Carboxylates: A Calorimetric, Crystallographic, Computational, and Conceptual Coinvestigation. Maria Victoria Roux, Juan Z. Davalos, Pilar Jimenez, Rafael Notario, Obis Castano, James S. Chickos, William Hanshaw, Hui Zhao, Nigam Rath, Joel F. Liebman, Behzad S. Farivar, A Bashir-Hashemi. *Journal of Organic Chemistry*, **2005**, 70(14), 5461-5470.
296. A new look at the nido-undecaborate system. Oleg Volkov, Krzysztof Radacki, Rhodri Ll. Thomas, Nigam P. Rath, Lawrence Barton. *Journal of Organometallic Chemistry*, **2005**, 690(11), 2736-2744.
297. Modular synthesis of triaroylbenzene-derived crownphanes. F. Christopher Pigge, Fatemeh Ghasedi, Angela V. Schmitt, Mayuri K. Dighe, Nigam P. Rath. *Tetrahedron*, **2005**, 61(22), 5363-5371.
298. Allylic hydroxy phosphonates: versatile chiral building blocks. Antonette De la Cruz, Anyu He, Anchalee Thanavaro, Bingli Yan, Christopher D. Spilling, Nigam P. Rath. *Journal of Organometallic Chemistry*, **2005**, 690(10), 2577-2592.
299. Synthesis and Characterization of Ruthenacarborane Complexes Incorporating Chelating N-Donor Ligands: Unexpected Luminescence from the Complex $[3\text{-CO-}3,3\text{-}\{\kappa\text{-}2\text{-Me}_2\text{N}(\text{CH}_2)_2\text{NMe}_2\}\text{-closo-}3,1,2\text{-RuC}_2\text{B}_9\text{H}_{11}]$. Paul A. Jelliss, Justin Mason, Jamie M. Nazzoli, Justin H. Orlando, Albert Vinson, Nigam P. Rath, Michael J. Shaw. *Inorganic Chemistry*, **2006**, 45(1), 370-385.
300. Unsymmetrical complexes containing the linear tetraphosphine ligand DPPEPM. Padma Nair, Colin P. White, Gordon K. Anderson, Nigam P. Rath. *Journal of Organometallic Chemistry*, **2006**, 691(3), 529-537.
301. Self-Assembly of Sticky TABs: Inclusion Complexes and Hydrates from 1,3,5-Tris(4-hydroxybenzoyl)benzene. F. Christopher Pigge, Mayuri K Dighe, Nigam P. Rath. *Crystal Growth & Design*, **2006**, 6(12), 2732-2738.
302. The structure and thermochemistry of 3:4,5:6-dibenzo-2-hydroxymethylene-cyclohepta-3,5-dienone (1) and some related compounds. Stefan Perisanu, Iulia Contineanu,

- Mircea D. Banciu, Hui Zhao, Nigam Rath, James Chickos. *Structural Chemistry*, **2006**, 17(6), 639-648.
303. Lattice Inclusion Complexes Prepared from 1,3,5-Tris(3-nitrobenzoyl)benzene. V. S. Senthil Kumar, F. Christopher Pigge, Nigam P. Rath. *Crystal Growth & Design*, **2006**, 6(1), 193-196.
304. Steric and Electronic Effects on Arylphosphonate Elimination from Organopalladium Complexes. Mark C. Kohler, Robert A. Stockland, Jr.; Nigam P. Rath. *Organometallics*, **2006**, 25(24), 5746-5756.
305. Dual Fluorescence from an Isonido ReIII Rhenacarborane Phosphine Complex, [7, 10- μ -H-7-CO-7, 7-(PPh₃)₂-isonido-7, 8, 9-ReC₂B₇H₉]. Steven W. Buckner, Matthew J. Fischer, Paul A. Jelliss, Rensheng Luo, Shelley D. Minter, Nigam P. Rath, Aleksander Siemiarzuk. *Inorganic Chemistry*, **2006**, 45(18), 7339-7347.
306. Abnormal Beckmann fragmentation/ring closing metathesis route for preparation of 18-nor- Δ -13(17)-androgens and their 18-nor-13, 17-epoxide derivatives. Cunde Wang, Nigam P. Rath, Douglas F. Covey. *Tetrahedron Letters*, **2006**, 47(45), 7837-7839.
307. Macropolyhedral boron-containing cluster chemistry. A synthetic approach via the auto-fusion of [6, 9-(SMe₂)₂-arachno-B₁₀H₁₂]. Jonathan Bould, Udo Doerfler, Nigam P. Rath, Lawrence Barton, Colin A. Kilner, Michael G. S. Londesborough, Daniel L. Ormsby, John D. Kennedy. *Dalton Transactions*, **2006**, (31), 3752-3765.
308. Formation of novel polycyclic cage compounds through "uncaging" of readily accessible higher cage compounds. Beena James, Nigam P. Rath, E. Suresh, Mangalam S. Nair. *Tetrahedron Letters*, **2006**, 47(32), 5775-5779.
309. Si-H Bond Activation by (Ph₃P)₂Pt(η^2 -C₂H₄) in Dihydrosilicon Tricycles that Also Contain O and N Heteroatoms. Janet Braddock-Wilking, Joyce Y. Corey, Lisa M. French, Eunwoo Choi, Victoria J. Speedie, Michael F. Rutherford, Shu Yao, Huan Xu, Nigam P. Rath. *Organometallics*, **2006**, 25(16), 3974-3988.
310. Neurosteroid Analogues. 11. Alternative Ring System Scaffolds: γ -Aminobutyric Acid Receptor Modulation and Anesthetic Actions of Benz[f]indenes. Jamie B. Scaglione, Brad D. Manion, Ann Benz, Amanda Taylor, Gregory T. DeKoster, Nigam P. Rath, Alex S. Evers, Charles F. Zorumski, Steven Mennerick, Douglas F. Covey. *Journal of Medicinal Chemistry*, **2006**, 49(15), 4595-4605.
311. Spectroscopic and Reactivity Studies of Platinum-Silicon Monomers and Dimers. Janet Braddock-Wilking, Joyce Y. Corey, Kevin A. Trankler, Huan Xu, Lisa M. French, Ngamjit Praingam, Colin White, Nigam P. Rath. *Organometallics*, **2006**, 25(11), 2859-2871.
312. Pentadienyl-Metal-Phosphine Chemistry. 33. Thiapentadienyl-Rhodium-Phosphine Chemistry. John R. Bleeke, Monica Shokeen, Eric S. Wise, Nigam P. Rath. *Organometallics*, **2006**, 25(10), 2486-2500.
313. Activation of Group 14 η -I-H Bonds at Platinum (0). Colin P. White, Janet Braddock-Wilking, Joyce Y. Corey, Huan Xu, Evgeniy Redekop, Sergey Sedinkin and Nigam P. Rath. *Organometallics*, **2007**, 26(8), 1996-2004.

314. Base-promoted synthesis of monometallic and bimetallic platinum complexes containing chelating O, O- or S, S-donor ligands. Ngamjit Praingam, Gordon K. Anderson and Nigam P. Rath. *Inorganica Chimica Acta*, **2007**, 360(5), 1767-1770.
315. Polymorphism in hydrazonium salt of 3, 5-pyrazoledicarboxylic acid. V. S. Senthil Kumar, T. Premkumar, S. Govindarajan, and Nigam P. Rath. *Indian J. of chemistry*, Section B: Organic Chemistry Including Medicinal Chemistry, **2007**, 46B (1), 141-147.
316. η -1-vinylidene formation from internal alkynones by C-C bond migration. Michael J. Shaw, Steven W. Bryant and Nigam Rath. *European Journal of Inorganic Chemistry*, **2007**, (25), 3943-3946.
317. Metalloprobes: Synthesis, characterization, and potency of a novel gallium(III) complex in human epidermal carcinoma cells. Scott E. Harpstrite, Julie L. Prior, Nigam P. Rath and Vijay Sharma. *Journal of Inorganic Biochemistry*, **2007**, 101(10), 1347-1353.
318. Concomitant polymorphism and Conformational polymorphism in diiodobis[1,2-bis(diphenylphosphino) ethane]platinum(II)Nigam P. Rath, V. S. Senthil Kumar, Mesfin Jenka and Gordon K. Anderson. *Inorganica Chimica Acta*, **2007**, 360, 2997-3001.
319. Asymmetric synthesis of 2-Alkyl-3-phosphonopropanoic acids via P-C bond formation and hydrogenation. Pallavi A. Badakar, Nigam P. Rath and Christopher D. Spilling. *Organic Letters*, **2007**, 9(18), 3619-3622.
320. 3-[(4-Nitrophenyl)aminocarbonyl]propanoic acid. Nigam P. Rath, H. J. Ravindra, M. R. Suresh Kumar, S. M. Dharmaprakash. *Acta Crystallographica, Section E: Structure Reports Online* **2007**, E63(11), o4424.
321. Enantiomeric Deoxycholic Acid: Total Synthesis, Characterization, and Preliminary Toxicity toward Colon Cancer Cell Lines. Bryson W. Katona, Nigam P. Rath, Shrikant Anant, William F. Stenson and Douglas F Covey. *Journal of Organic Chemistry*, **2007**, 72(24), 9298-9307.
322. Solid-State Photodimerization of 1,2-Bis(5'-pyrimidyl)ethene. Eric Bosch, Julie M. Matheny and Nigam Rath. *Synthetic Communications*, **2007**, 37(21), 3835-3839.
323. Versatile Synthesis and Mechanism of Activation of S-Benzoxazolyl Glycosides. Medha N. Kamat, Nigam P. Rath and Alexei V. Demchenko. *Journal of Organic Chemistry*, **2007**, 72(18), 6938-6946.
324. Neurosteroid analogues. Part 13: Synthetic methods for the preparation of 2 β -hydroxygonane derivatives as structural mimics of ent-3 α -hydroxysteroid modulators of GABAA receptors. Cunde Wang, Nigam P. Rath, Douglas F. Covey. *Tetrahedron*, **2007**, 63(33), 7977-7984.
325. Pentadienyl-Metal-Phosphine Chemistry. Part 34. Synthesis, Structure, and Spectroscopy of Silaallyl- and Silapentadienyl-Iridium-Phosphine Complexes. John R. Bleeke, Todsapon Thananathanachon and Nigam P. Rath. *Organometallics*, **2007**, 26(16), 3904-3907.
326. Palladium-Catalyzed Potassium Enoxyborate Alkylation of Enantiopure Hajos-Parrish Indenone To Construct Rearranged Steroid Ring Systems. Izabella Jastrzebska, Jamie B.

- Scaglione, Gregory T. DeKoster, Nigam P. Rath and Douglas F. Covey. *Journal of Organic Chemistry*, **2007**, 72(13), 4837-4843.
327. Activation of Group 14 El-H Bonds at Platinum(0). Colin P. White, Janet Braddock-Wilking, Joyce Y. Corey, Huan Xu, Evgeniy Redekop, Sergey Sedinkin, Nigam P. Rath. *Organometallics*, **2007**, 26(8), 1996-2004.
328. Ligand substitution within nonporous crystals of a coordination polymer: elimination from and insertion into Ag-O bonds by alcohol molecules in a solid-vapor reaction. Stefano Libri, Miriam Mahler, Guillermo Minguez Espallargas, Daljit C. N. G. Singh, Janet Soleimannejad, Harry Adams, Michael D. Burgard, Nigam P. Rath, Michela Brunelli and Lee Brammer. *Angewandte Chemie, Int. Ed.*, **2008**, 47(9), 1693-1697.
329. 4-(4-Chlorophenyl)-5-[1-(4-chlorophenyl)-2-methyl-2-nitropropyl]-1,2,3-selenadiazole. A. Marx, S. Saravanan, S. Muthusubramanian, V. Manivannan and Nigam P. Rath. *Acta Crystallographica, Section E: Structure Reports Online*, **2008**, E64(2), o349.
330. Molecular Packing and Solid-State Fluorescence of Alkoxy-Cyano Substituted Diphenylbutadienes: Structure of the Luminescent Aggregates. Riju Davis, N. S. Saleesh Kumar, Shibu Abraham, C.H. Suresh, Nigam P. Rath, Nobuyuki Tamaoki, Suresh Das. *Journal of Physical Chemistry C*, **2008**, 112(6), 2137-2146.
331. Synthesis, Characterization, and Reactivity of Iron Trisamidoamine Complexes That Undergo Both Metal- and Ligand-Centered Oxidative Transformations. Relme Celenligil-Cetin, Patrina Paraskevopoulou, Rupam Dinda, Richard J. Staples, Ekkehard Sinn, Nigam P. Rath and Pericles Stavropoulos. *Inorganic Chemistry*, **2008**, 47(3), 1165-1172.

Submitted for Publication

Presentations and Abstracts:

1. Structural effects on fluorescence in copper iodide donor ligand tetrameric cluster. Elizabeth M. Holt, Jerry P. Jasinski, Nigam P. Rath. Paper presented at 39th Southwest Regional ACS Meeting, Tulsa, Oklahoma, December 1983.
2. Fluorescent Copper (I) cluster systems. Nigam P. Rath, Jerry P. Jasinski and Elizabeth M. Holt. Poster presented at the International Union of Crystallography XIII Congress, Hamburg, W. Germany, August 1984.
3. Fluorescent Copper(I) cluster systems with mixed ligands. Nigam P. Rath and Elizabeth M. Holt. Paper presented at 40th Southwest Regional ACS Meeting, Lubbock, Texas, December 1984.
4. Fluorescent Copper(I) Iodide complexes with pyridine derivatives. Nigam P. Rath, Jana L. Maxwell and Elizabeth M. Holt. Paper presented at the national ACS Meeting, Chicago, Illinois, September 1985.

5. Fluorescent Cu(I) complexes: Correlation of structure and emission characteristics. Elizabeth M. Holt and Nigam P. Rath. Paper presented at the National ACS Meeting, Chicago, Illinois, September, 1985.
6. Emitting Copper(I) halide systems: Correlation of structure and emission properties. Elizabeth M. Holt, Jay A. Tompkins, Nigam P. Rath and Jana L. Maxwell. Paper presented at National ACS Meeting, Denver, Colorado, April 1987.
7. Multiple deprotonation of a ferraborane: Preparation and reactivity of mono-, di- and tri-anions of $[\text{HFe}_4(\text{CO})_{12}\text{BH}_2]$. Nigam P. Rath and Thomas P. Fehlner. Paper presented at the 21st Great Lakes Regional ACS Meeting, Chicago, Illinois, June, 1987.
8. Multiple deprotonation of a ferraborane: preparation and reactivity of a discrete metal boride. Nigam P. Rath and Thomas P. Fehlner. Poster presented at the National ACS Meeting, New Orleans, Louisiana, September, 1987.
9. Reversible deprotonation and protonation of a ferraborane: synthesis, characterization and reactivity of the first transition metal boride. Nigam P. Rath and Thomas P. Fehlner. Poster presented at NDPUIU Inorganic chemistry symposium, Bloomington, Indiana, October, 1987.
10. Electronic interactions in π -cation radicals of metallo-porphyrines. W. Robert Scheidt, Hungsun Song, Nigam P. Rath, Christopher A. Reed. Paper presented at the National ACS Meeting, Ontario, Canada, June, 1988.
11. Electronic interactions in π -cation radicals of metallo-porphyrines. Nigam P. Rath, W. Robert Scheidt, Hungsun Song, Christopher A. Reed. Poster presented at the Annual Meeting of American Crystallography association, Philadelphia, Pennsylvania, June 1988.
12. Reactivity of $[\text{HFe}_4(\text{CO})_{12}\text{BH}_2]$: A novel cluster with a butterfly metal arrangement. Thomas P. Fehlner, Rajesh Khattar and Nigam P. Rath. Paper presented at the International Conference on Organo-metallic chemistry, Turin, Italy, September, 1988.
13. Transition metal clusters containing main group atoms. Mimics of organometallic systems. R. D. Barreto, Thomas P. Fehlner, Rajesh Khattar and Nigam P. Rath. Paper presented at 4th European symposium on Inorganic Chemistry, Heidelberg, W. Germany, September, 1988.
14. Reactions of Heterobimetallic compounds with 1,1-dimethylallene. Steven R. McDonald, Nigam P. Rath, Michael J. Checuti. Poster presented at PINDU Inorganic Chemistry Symposium, Notre Dame, Indiana, October, 1988.
15. Synthesis and characterization of $\text{Co}_3(\text{CO})_9\text{C}(\text{CH}_2)_5\text{OH}$: A micellar cluster. Allen Aradi, John Basil, Nigam P. Rath and Thomas P. Fehlner. Poster presented at Midwestern Regional ACS Meeting, St. Louis, Missouri, November 1989.
16. The synthesis and physical properties of a new synthetic metal precursor: Dimethyltetrathiotetracene (DMTTT). M. T. Jones, T. Maruao, M. Singh, D. Min and N. P. Rath. Poster presented at International Conference on Science and Technology of synthetic metals, Sept. 1990, Tübingen, W. Germany.
17. Phosphine-ligated Copper(I) Reagents: A Novel Synthesis of Di- μ -bromotetrakis(methyldiphenylphosphine) Dicopper(I) and the Structure of $[\text{CH}_3(\text{C}_6\text{H}_5)_2\text{P}]_3\text{CuBr}$ and $\{[\text{CH}_3(\text{C}_6\text{H}_5)_2\text{P}]_2\text{CuBr}\}_2$. D. K. Srivastava, Nigam P.

- Rath, and Lawrence Barton. Poster presented at the Great Lakes Regional ACS meeting, Indianapolis, 1991.
18. X-Ray Structural Studies of Cu(I)-Phospine Complexes, $[\text{CH}_3(\text{C}_6\text{H}_5)_2\text{P}]_3\text{CuBr}$ and $\{[\text{CH}_3(\text{C}_6\text{H}_5)_2\text{P}]_2\text{CuBr}\}_2$. Nigam P. Rath, D. K. Srivastava and Lawrence Barton. Poster presented at the Annual Meeting of the American Crystallography association, Toledo, July, 1991.
 19. Synthesis and Characterization of 1,9-difluoro-5-methyl-5-phenyl-10,11-dihydrobenzo [b,f]silepin. A. J. Pitts, J. Y. Corey and N. P. Rath. South Central Missouri ACS Undergraduate Research Symposium, March 1992.
 20. Pt and Pd Triflates as Precursors to Cyclopentadienyl Complexes. Minren Lin, Gordon K. Anderson and Nigam P. Rath. Paper presented in 203rd National ACS meeting, San Francisco, April, 1992.
 21. Pt and Pd Triflates as Precursors to Cyclopentadienyl and Other Complexes. Stephen Fallis, Gordon K. Anderson, Diane L. Oliver and Nigam P. Rath. Paper presented in 203rd National ACS meeting, San Francisco, April, 1992.
 22. Structures and Reactions of Platinum Dimers Bridged by Phosphino-cyclopentadienyl Ligands. G. K. Anderson, K. A. Fallis, F. T. Ladipo, M. Lin and N. P. Rath. Paper presented at Int. Conference on Coordination Chem., Lausanne, Switzerland, July, 1992.
 23. The three Isomers of Triphenylstannyl-nido- pentaborane(9): Isolation and Structural Characterization of 2,3- $\mu(\text{SnPh}_3)\text{B}_5\text{H}_8$, 1-(SnPh_3) B_5H_8 and 1-(SnClPh_2) B_5H_8 . L. Barton, D. K. Srivastava and N. P. Rath. Abstract, Third Boron USA Workshop, Pullman, WA, July, 1992.
 24. Carbonylation of Organoplatinum Dimer Bridged by Diphenyl Phosphinocyclopentadienyl Ligands. F. T. Ladipo, G. K. Anderson and N. P. Rath. Paper presented at the ACS Midwest Meeting, Nov 1992.
 25. Palladium and Platinum Dimers Bridged by Diphenyl Phosphinocyclopentadienyl Ligands. K. A. Fallis, G. K. Anderson and N. P. Rath. Paper presented at the ACS Midwest Regional Meeting, Nov 1992.
 26. NMR Spectra, Structure and Some Chemistry of $\text{B}_6\text{H}_{10}\text{Fe}(\text{CO})_4$. Dileep K. Srivastava, Nigam P. Rath, Lawrence Barton. Paper presented at the ACS Midwest Meeting, Nov 1992.
 27. Structure and Spectra of 4,5- μ -(Tetracarbonyl)- ironhexaborane(10), $\text{Fe}(\text{CO})_4\text{B}_6\text{H}_{10}$ and its Conjugate Base $[\text{Fe}(\text{CO})_4\text{B}_6\text{H}_9]^-$. D. K. Srivastava, N. P. Rath, L. Barton, J. D. Ragaini, O. Hollander, R. Godfroid and S. G. Shore. Abstract. 205th ACS National Meeting, Denver, CO, March, 1993.
 28. Synthesis and Characterization of 1,9-difluoro-5-methyl -5-phenyl-10,11-dihydrobenzo [b,f]silepin. A. J. Pitts, J. Y. Corey, J. L. Huhmann, N. P. Rath and R. E. K. Winter. Presentation at the XXV Silicon Symposium at IUPUI, Indianapolis, March 93.
 29. Dehydrocoupling of Hydrosilanes with Catalysts Derived from Ansa-metallocene Dihalide and BuLi. R.M. Shaltout, J. Y. Corey and N. P. Rath. Presentation at the XXV Silicon Symposium at IUPUI, Indianapolis, March 93.

30. Chemistry of Platinum and Palladium Dimers Bridged by Phosphino-cyclopentadienyl Ligands. G. K. Anderson, K. A. Fallis, F. T. Ladipo and N. P. Rath. Paper presented at the Intl. Conf. on Pt Group Metals, St. Andrews, July 1993.
31. Structure and Spectra of 4,5- μ -(Tetracarbonyl)- ironhexaborane(10), $\text{Fe}(\text{CO})_4\text{B}_6\text{H}_{10}$ and its Conjugate Base $[\text{Fe}(\text{CO})_4\text{B}_6\text{H}_9]^-$. D. K. Srivastava, N. P. Rath, L. Barton, J. D. Ragaini, O. Hollander, R. Godfroid and S. G. Shore. Abstract. Eighth Intl. Symposium on Boron Chemistry, Knoxville, TN, July 1993.
32. Triphenylstannyl Derivatives of Pentaborane(9) and Hexaborane(10). D. K. Srivastava, H. Fang, N. P. Rath and L. Barton. Abstract, Eighth Intl. Symposium on Boron Chemistry, Knoxville, TN, July 1993.
33. Triphenylstannyl Derivatives of Pentaborane(9) and Hexaborane(10). D. K. Srivastava, H. Fang, N. P. Rath and L. Barton. Abstract, 205th National ACS Meeting, Chicago, IL, August 1993.
34. Investigation of the Reaction of $(\text{POR})\text{Zr}(\text{OAc})_2$ with n- BuLi. J. L. Huhmann, J. Y. Corey and N. P. Rath. Abstract, 206th National ACS Meeting, Chicago, IL, August 1993.
35. Ansa-metallocene Dihalides and BuLi as Catalysts for the Dehydrocoupling of Hydrosilanes. R. M. Shaltout, J. Y. Corey and N. P. Rath. Abstract, 206th National ACS Meeting, Chicago, IL, August 1993.
36. Silicon-silicon Bond Formation by Dehydrocoupling of Hydrosilanes with Ansa-metallocene Dichlorides and BuLi. R. M. Shaltout, J. Y. Corey and N. P. Rath. 28th Midwest Regional Meeting of the ACS, Columbia, MO, September 1993.
37. Mixed Metal Complexes Containing Bridging Dppm Ligands. Gordon K. Anderson, Chongfu Xu, Kathleen A. Fallis and Nigam P. Rath. XVI Intl. Conference on Organometallic Chemistry, Sussex, UK, July 1994.
38. Platinum and Palladium Complexes Containing phosphinocyclopentadienyl Ligand. Gordon K. Anderson, Kathleen A. Fallis, Folami T. Ladipo, Minren Lin and Nigam P. Rath. XVI Intl. Conference on Organometallic Chemistry, Sussex, UK, July 1994.
39. Mixed Transition Metal Complexes with Bridging Diphosphine Ligands. Gordon K. Anderson, Chongfu Xu, Nigam P. Rath and Janet Braddock-Wilking. SE Regional ACS Meeting, Birmingham, AL, Oct 1994.
40. Metallaheptaboranes: Studies of the species, *Nido*- $(\text{PPh}_3)_2(\text{CO})\text{OsB}_5\text{H}_9$ and *Nido*- $(\text{PPh}_3)_2(\text{CO})\text{IrB}_5\text{H}_8$. Air Stable analogues of Hexaborane(10). Jonathan Bould, Nigam P. Rath and Lawrence Barton. Midwest Regional ACS Meeting, Kansas, Nov 1994.
41. Synthesis and reactions of Hydride-bridged Palladium and Platinum A-frame Complexes. G. K. Anderson, Chongfu Xu, K. A. Fallis and N. P. Rath. Missouri Inorganic Day, St. Louis, MO, May 1995.
42. Formation of Novel Bimetalloheptaboranes: Crystal and Molecular Structure of $(\text{PPh}_3)_2\text{COIr}-(\text{PMe}_2\text{Ph})\text{ClPtB}_5\text{H}_6$, 1,1-(CO)₃-2,2,2-(CO)₂(PPh₃)-5-(PPh₃)-closo-1,2-FeIrB₅H₄ and *Pileo*- $[(\text{PPh}_3)_2(\text{CO})\text{HOSB}_5\text{H}_5\text{Ir}(\text{PPh}_3)_2\text{CO}]$. Lawrence Barton, J. Bould and N. P. Rath, 208th. National Meeting of the American Chemical Society in Anaheim, CA, in April, 1995.

43. Synthesis of B-Frame Clusters. Jonathan Bould , Nigam P. Rath and Lawrence Barton. Missouri Universities Inorganic Day, May 6, 1995.
44. Heterobimetallaboranes Based on nido-(PPh₃)₂(CO)IrB₅H₈. Lawrence Barton , Nigam P. Rath and Jonathan Bould. Missouri Universities Inorganic Day, May 6, 1995.
45. Formation of HeteroBimetallaheptaboranes from the *nido*-metalla-hexaboranes (PPh₃)₂(CO)OsB₅H₉ and (PPh₃)₂(CO)IrB₅H₈. Lawrence Barton, J. Bould and N. P. Rath. 209th National Meeting of the American Chemical Society in Chicago in August, 1995.
46. Preparation and Characterization of Dibriged Binuclear Titanocene Compounds. J. Y. Corey, J. L. Huhmann, and N. P. Rath. Organometallics Gordon Conference, July 1995.
47. Silicon Bridged Binuclear Titanocene Catalysts in the Dehydropolymerization of PhSiH₃. J. Y. Corey, J. L. Huhmann, and N. P. Rath. 12th Missouri Inorganic Day, St. Louis, MO, May 1995.
48. Silicon Bridged Binuclear Titanocene Catalysts in the Dehydropolymerization of PhSiH₃. Joyce Y. Corey, J. L. Huhmann, and N. P. Rath. XVIII Silicon Meeting, Gainesville, FL, March 1995.
49. Synthesis and Reactivity of Sterically Hindered Diarylsilanes: (R_F)₂SiHX (R_F = (CF₃)₃C₆H₂; X = H, F). J. Braddock-Wilking, M.W. Schiesher, L. Brammer, J.L. Huhmann, R. Shaltout, Peter P. Gaspar, and Nigam P. Rath. Gordon Research Conference, Organometallics Division, July 1995, Newport RI.
50. Synthesis and Characterization of Sterically Hindered Diarylsilanes Containing 2,4,6-trimethylphenyl and 2,4,6-tris-(trifluoromethylphenyl) Substituents. J. Braddock-Wilking, M.W. Schiesher, L. Brammer, J.L. Huhmann, R. Shaltout, Peter P. Gaspar, and Nigam P. Rath. 12th Missouri Inorganic Chemistry Day, University of Missouri-St. Louis, St. Louis, MO, May 1995.
51. Synthesis and Characterization of Sterically Hindered Diarylsilanes Containing 2,4,6-trimethylphenyl and 2,4,6-tris-(trifluoromethylphenyl) Substituents. X-ray Crystal Structure of bis[2,4,6-tris-(trifluoromethyl-phenyl)]fluorosilane. J. Braddock-Wilking, M.W. Schiesher, L. Brammer, J.L. Huhmann, R. Shaltout and N. P. Rath. Twenty-Eighth Organosilicon Symposium, March 1995, Gainesville, FL, Abstract P-22.
52. Formation of Hetero Bimetallaheptaboranes from nido-metalla-hexaboranes (PPh₃)₂(CO)OsB₅H₉ and (PPh₃)₂(CO)IrB₅H₈. Jonathan Bould, Nigam P. Rath and Lawrence Barton. Abstract, INTRABORON, Leeds University, Sept. 11-13, 1995.
53. Some Iridanoborane Chemistry. Jonathan Bould, Nigam P. Rath and Lawrence Barton. Abstract, INTRABORON, Leeds University, Sept. 11-13, 1995.
54. Heteroatom Incorporation into Metallaboranes. Lawrence Barton, Jonathan Bould, Nigam P. Rath; 13th Annual MO Inorganic Day, Univ. Of Missouri - Rolla, April 1996.

55. Synthesis and Characterization of the Sterically Hindered Platinum Silyl Hydride Complex, $\text{cis-}[\text{Ar}_2\text{HSi}]\text{PtH}(\text{PPh}_3)_2$. Janet Braddock-Wilking, Nigam Rath and Peter D. Gaspar. 13th Annual MO Inorganic Day, Univ. Of Missouri - Rolla, April 1996.
56. Synthesis of Palladium Complexes of the type $[\text{PdClR}(\text{cod})]$. β -Elimination from $[\text{PdClEt}(\text{cod})]$ and related reactions. Robert A. Stockland, Jr., Gordon K. Anderson, Nigam Rath and Janet Braddock-Wilking. 13th Annual MO Inorganic Day, Univ. Of Missouri - Rolla, April 1996.
57. Metalla-B-Frame Chemistry. Jonathan Bould, Nigam P. Rath and Lawrence Barton. BUSA-V-MEX meeting, Mexico City, Mexico, May 1996.
58. Heterobimetallaboranes based on Small Borane Cages. Jonathan Bould, Nigam P. Rath and Lawrence Barton. Fifth Boron-USA Workshop, (BUSA-V-MEX), Mexico City, Mexico, May, 1996.
59. Nido exo-arachno Metallahexaborane Equilibrium: Formation of $[(\text{PPh}_3)_2(\text{CO})\text{OsB}_5\text{H}_9](\text{PR}_3)$ providing possible insights into the mechanism of formation of the key compound $1\text{-}[\text{Fe}(\text{CO})_3]\text{B}_4\text{H}_8$. Lawrence Barton, Jonathan Bould, Hong Fang, Kevin Hupp and Nigam P. Rath. Ninth International Meeting on Boron Chemistry, Heidelberg, July 14-18, 1996.
60. Incorporation of Heteroatoms into Metallaboranes: Formation of Metallacarboranes, Metallathiaboranes and An Iridaazaborane from an Iridanonaborane. L. Barton, J. Bould, N. P. Rath, and J. D. Kennedy. Ninth International Meeting on Boron Chemistry, Heidelberg, July 14-18, 1996.
61. Mass Spectrometry of Metallaboranes and Related Species. Charles Gloeckner, Lawrence Barton, Jonathan Bould and Nigam P. Rath. Abstracts, Annual Meeting, American Society for Mass Spectrometry, Portland, OR, May 11-16, 1996.
62. Metallaborane Heteroatom Incorporation Reactions: Metallacarboranes, Metallathiaboranes and An Iridaazaborane from Iridanonaborane Precursors. Jonathan Bould, Nigam P. Rath and Lawrence Barton. Abstracts, 211th. National Meeting, American Chemical Society, Orlando, FL, Aug 1996.
63. Synthesis and Characterization of The Sterically Hindered Platinum Silyl Hydride Complex, $\text{Cis } [(\text{RF})_2\text{HSi}]\text{PtH}(\text{PPh}_3)_2$ [$\text{RF} = 2,4,6\text{-tris(trifluoromethyl)phenyl}$]]. J. Braddock-Wilking, N. Rath, and P. P. Gaspar. Twenty-Ninth Organosilicon Symposium, March, 1996, Evanston, IL, Abstract P47.
64. Structure Determination Using CCD Area Detector. How small a crystal is too small?. Nigam P. Rath. Invited talk, IUCR meeting, Seattle, August, 96.

65. Synthesis, Characterization, and Reactivity of Some Sterically Hindered Mono- and Diarylsilanes. J. Braddock-Wilking Y. Levchinsky, N. Rath, and P. P. Gaspar. Eleventh International Symposium on Organosilicon Chemistry, September 1996, Montpellier, France, Abstract PA97.
66. Optimizing Single Crystal Data Collections and Data Reduction Parameters for a CCD Based Area Detector System. Christina M. Collins and Nigam P. Rath. Undergraduate Research Symposium, Argonne National Laboratory, Chicago, October 1996.
67. Chemistry of the Hexaborane(10) Analogue $(PPh_3)_2(CO)OsB_5H_9$: Formation and Characterization of Lewis Base adducts and a New Degradation Reaction for Metallaborane Clusters. Lawrence Barton, Jonathan Bould, Hong Fang, Kevin Hupp and Nigam P. Rath. Abstracts, 212th. National Meeting, American Chemical Society, San Francisco, CA, Apr 1997.
68. Incorporation of Unsaturated Molecules into Polyhedral Borane Cages: Synthesis and Characterization of a New Dicage Orthocarborane. R. Marcias, N. P. Rath and L. Barton. 213th National Meeting of the American Chemical Society, Las Vegas, Sept. 1997.
69. Synthesis and Characterization of Early Transition Metal Metallaboranes: Structure of a Novel Air-stable Cationic Zirconaborane. Rhodri Ll. Thomas, Nigam P. Rath and Lawrence Barton. 213th National Meeting of the American Chemical Society, Las Vegas, Sept. 1997.
70. Divergent Pathways in the Reaction of Hexamethylbenzene with Dimethyldioxirane. Robert W. Murray, Megh Singh and Nigam P. Rath. 32nd ACS Midwest Regional Meeting, Lake of the Ozarks, 1997.
71. Synthesis and Characterization of Late Transition-Metal Silyl Complexes. Yanina Levchinsky, Janet Braddock-Wilking, Jessica Ricca and Nigam P. Rath. 32nd ACS Midwest Regional Meeting, Lake of the Ozarks, 1997.
72. Heterobimetallaboranes Based on the Species, *nido*- $(PPh_3)_2(CO)OsB_5H_9$: An Air-stable Analogue of Hexaborane(10). P. McQuade, R. Ll. Thomas, R. Marcias, H. Fang, N. P. Rath and L. Barton. 32nd ACS Midwest Regional Meeting, Lake of the Ozarks, 1997.
73. Synthesis and Characterization of Diamine-platinum and palladium Complexes of L-ascorbic Acid. Malcom J. Arendse, Gordon K. Anderson and Nigam P. Rath. 32nd ACS Midwest Regional Meeting, Lake of the Ozarks, 1997.
74. Precursors for Low Temperature Growth of III-V Nitrides. Sean D. Dingman, William E. Buhro and Nigam P. Rath. 32nd ACS Midwest Regional Meeting, Lake of the Ozarks, 1997.
75. Fluxional Processes Involving Cyclooctenylpalladium Complexes. Robert A. Stockland, Jr., Gordon K. Anderson, Janet Braddock-Wilking and Nigam P. Rath. 32nd ACS

- Midwest Regional Meeting, Lake of the Ozarks, 1997.
76. Synthesis and Characterization of Early Transition Metal Metallaboranes: Structure of $[(Cp)_2Zr_2B_5H_8][B_{11}H_{14}]$, A Novel Air-stable Dizirconaborane. Rhodri Ll. Thomas, Nigam P. Rath and Lawrence Barton. 32nd ACS Midwest Regional Meeting, Lake of the Ozarks, 1997.
 77. Characterization of a New Dicage Orthocarborane and the Observation of Supramolecular Assembly Involving Borane Cages. R. Marcias, N. P. Rath and L. Barton. 32nd ACS Midwest Regional Meeting, Lake of the Ozarks, 1997.
 78. Improved Synthesis and X-Ray Crystallographic Structure Determination of the stereoisomeric K-region Arene Dioxides of Pyrene and Dibenz[a,h]anthracene. Robert W. Murray, Megh Singh and Nigam P. Rath. 16th Annual Symposium of Polycyclic Aromatic Compounds, North Carolina, 1997.
 79. Synthesis of C₂-Symmetric Group 4 Metallocene Dichlorides as Precatalysts for the Dehydropolymerization of Phenylsilane to Polyphenylsilanes. Joyce Y. Corey, Brian Grimmond, Nigam P. Rath, Juan Carlos Mareque-Rivas and Qingzheng Wang. Fargo Main Group Conference. 1998.
 80. Reactions of the Hexaborane(10) analogue *nido*-(PPh₃)₂(CO)OsB₅H₉ with phosphines. P. McQuade, R. Ll. Thomas, H. Fang, N. P. Rath and L. Barton. Missouri Inorganic Day, Columbia, MO, May 2, 1998.
 81. New Metallaborane Chemistry Arising from pentaborane(9): Synthesis and Characterization of the First Nine-vertex *n-arachno*-Biplatinaborane. Ramón Macías, Nigam P. Rath and Lawrence Barton. Missouri Inorganic Day, Columbia, MO, May 2, 1998.
 82. Reactions of the Hexaborane(10) Analogue *nido*-(PPh₃)₂(CO)OsB₅H₉ with Phosphines. P. McQuade, R. Ll. Thomas, H. Fang, N. P. Rath and L. Barton. Abstracts, BUSA-VI, Athens GA, May 14 – 18, 1998.
 83. New metallaborane chemistry arising from pentaborane(9): synthesis and characterization of the first nine-vertex *n-arachno*-Biplatinaborane. Ramón Macías, Nigam P. Rath and Lawrence Barton. Abstracts, BUSA-VI, Athens GA, May 14 – 18, 1998.
 84. Construction of Metallaheteroboranes and Macropolyhedral Boranes From Iridanonaborane Precursors. J. Bould, N. P. Rath, J. D. Kennedy and L. Barton, Abstracts, BUSA-VI, Athens GA, May 14 – 18, 1998.
 85. $[8,8-\eta^2-\{\eta^2-(BH_3)Ph_2PCH_2PPh_2\}-8,7-RhSB_9H_{10}]$: A *nido*-rhodathiaborane with a novel intramolecular phosphine-borane adduct coordinating to a metal center. Ramón Macías, Nigam P. Rath and Lawrence Barton. Abstracts, 215th. National Meeting, American

- Chemical Society, Boston, Aug. 1998.
86. Novel Chemistry on a Rhodathiaborane Cluster: Formation of a Complex Containing a Unique Bidentate Phosphine-borane Ligand, [η^2 -(BH₃)₂Ph₂PCH₂PPh₂]. Ramón Macías, N. P. Rath and L. Barton. Abstracts, 33rd. Midwest Regional Meeting, American Chemical Society, Wichita, KS, Nov 1998.
 87. P. McQuade, N. P. Rath and L. Barton. Reactions of small metallaboranes with Lewis bases. Abstracts, 33rd. Midwest Regional Meeting, American Chemical Society, Wichita, KS, Nov 1998.
 88. Structural Studies of Oxides of Polycyclic Aromatic Hydrocarbons. Nigam P. Rath, Megh Singh and Robert W. Murray. Annual Meeting of the American Crystallography Association, Buffalo, NY, May 1999.
 89. Macropolyhedral Boron-containing Cluster Chemistry. Characterization of Larger Metallaborane Assemblies with up to Thirty Metal and Boron Atoms and some Possible General Structural Implications. Jonathan Bould, Daniel L. Ormsby, Hai-Jun Yao, Chun-Hua Hu, Jie Sun, Ruo-Shui Jin, Suzanne L. Shea, William Clegg, Nigam P. Rath, Mark Thronton-Pett, Robert Greatrex, Pei-Ju Zheng, Lawrence Barton and John D. Kennedy. International Meeting on Boron Chemistry, Durham, UK, 1999.
 90. Spirocyclic cyclohexadienyl ruthenium complexes via intramolecular nucleophilic aromatic addition to arene-Ru(II) cations. F. C. Pigge, S. Fang, N. P. Rath. Meeting of the American Chemical Society, March 2000.
 91. Synthesis and reactivity of palladium dimers. G. K. Anderson, M. Janka and N. P. Rath. Meeting of the American Chemical Society, March 2000, INOR-141.
 92. Synthesis of neutral molecular squares. G. K. Anderson, D. A. Carrigan and N. P. Rath. Meeting of the American Chemical Society, March 2000 INOR-149.
 93. Platinum and palladium complexes containing ph-LTTP ligands. G. K. Anderson, P. Nair and N. P. Rath. Meeting of the American Chemical Society, March 2000, INOR-151.
 94. Preparation of bidentate phosphine derivatives and their reactions with metallohexaboranes. L. Barton, N. P. Rath and P. McQuade. Meeting of the American Chemical Society, March 2000, INOR-302.
 95. Spirocyclic cyclohexadienyl ruthenium complexes via intramolecular nucleophilic aromatic addition to arene-Ru(II) cations. F. Christopher Pigge, Shiyue Fang, Nigam P. Rath. Abstracts, 219th ACS National Meeting, San Francisco, March 26-30, 2000, ORGN-602.
 96. Formation and characterization of Group IV transition metal derivatives of pentaborane (9). Rhodri LI. Thomas, Mitsuhiro Hata, Nigam P. Rath, and Lawrence Barton.

- Abstracts, 222nd National Meeting, American Chemical Society, Chicago, IL, August, 2001.
97. Formation and characterization of a series of bifunctional bidentate phosphines. Mitsuhiro Hata, Paul McQuade, Nigam P. Rath, Lawrence Barton. National ACS Meeting, Chicago, 2001.
 98. Reactions of 11-vertex rhodathiaboranes and rhodadicarbaboranes with bidentate phosphines and their subsequent rearrangements. Oleg Volkov, Ramon Macias, Nigam P. Rath and Lawrence Barton. Abstracts, 222nd National Meeting, American Chemical Society, Chicago, IL, August 2001.
 99. Reactions of 11-vertex rhodathiaboranes and rhodadicarbaboranes with bidentate phosphines and their subsequent rearrangements. Lawrence Barton, Oleg Volkov, Ramon Macias, and Nigam P. Rath, Abstracts, Euroboron2, Dinard, France, Sept 2 – 6, 2001.
 100. Metallaboranes in St. Louis: New Wrinkles on Phosphine Borane Chemistry. Lawrence Barton, Mitsuhiro Hata, Paul McQuade Nigam P. Rath and Oleg Volkov. Abstracts, INTRABORON20, Killin, Scotland, Sept. 10 – 12, 2001.
 101. Bimetallic complexes of phenyl-linear tetratertiary phosphine. Gordon K Anderson, Padma Nair, and Nigam P. Rath. National ACS Meeting, Chicago, 2001.
 102. Construction of neutral molecular squares. Gordon K. Anderson, Mesfin Janka, and Nigam P. Rath. National ACS Meeting, Chicago, 2001.
 103. A versatile Benzannulation Approach to Novel Architectures: Potential Applications of 1,3,5-Triaroylbenzene Derivatives in Supramolecular Chemistry. F. Christopher Pigge, Fatemeh Ghasedi, and Nigam P. Rath. Presented at the Gordon Conference on Physical Organic Chemistry, Plymouth, July 2001.
 104. The Structural Chemistry of the *Arachno*-Nonaboranes. L. Barton, J. Bould, R. Greatrex, J. D. Kennedy, D. L. Ormsby, M. G. S. Londesborough, K. L. F. Callaghan, M. Thornton-Pett, S. J. Teat, W. Clegg, H. Fang, N. P. Rath, and T. R. Spalding. Abstracts, *Boron Americas-VIII*, Death Valley, Jan 2002.
 105. Reactions of 11-vertex rhodathiaboranes and rhodadicarbaboranes with bidentate phosphines and their subsequent rearrangements. O. Volkov, R. Macias, N. P. Rath and L. Barton. Abstracts, *Boron Americas-VIII*, Death Valley, CA. Jan, 2002.
 106. Formation of Group IV transition metal derivatives of pentaborane(9) and a novel oxidative coupling reaction to form the new structural motif $B_9H_{11}(PPh_3)_2$. M. Hata, R. LI. Thomas, N. P. Rath, L. Barton. Abstracts, *Boron Americas-VIII*, Death Valley, Jan, 2002.

107. Data security issues in the X-ray diffraction Laboratory. Nigam P. Rath and Eric A. Bruton. Invited talk presented at the Annual Am. Crystallography Meeting, San Antonio, TX, May 2002.
108. Organometallic chemistry on a rhodathiaborane cluster: Reactions with bidentate phosphines and organotransition metal reagents. Lawrence Barton, Oleg Volkov, Nigam P. Rath. 224th ACS National Meeting, Boston, MA, August 18-22, 2002, INOR-568.
109. Treatment of $L_2Pd(C(O)Me)(P(O)(OPh)_2)$ with substituted olefins and acetylenes. Adam M. Levine, Robert A. Stockland, Jr., Nigam P. Rath. 224th ACS National Meeting, Boston, MA, August 18-22, 2002, INOR-529.
110. An investigation of the lability of $P(C_6H_4Cl_2)_2(C_6H_5)$ by the addition of Lewis bases to $Pd(P(C_6H_4Cl_2)_2(C_6H_5))_2Cl_2$. Joshua J. Stone, Robert A. Stockland, Jr.; Nigam P. Rath. 224th ACS National Meeting, Boston, MA, August 18-22, 2002, INOR-521.
111. Structures and properties on liquid-crystal complexes and models for liquid-crystal complexes. Stephen Clark, John R. Chipperfield, Simon Teat, Ekkehard Sinn, Nigam P. Rath. 224th ACS National Meeting, Boston, MA, August 18-22, 2002, INOR-177.
112. Polymorphism, supramolecular isomerism and guest inclusion in 1,3,5-tris(4-cyanobenzoyl)benzene. V. S. Senthil Kumar, F. Christopher Pigge and Nigam P. Rath. Presented at the 38th Midwest Regional ACS Meeting, Nov 2003, Columbia.
113. Reaction of Pt(0) Phosphine Complexes with Silicon Heterocycles. Lisa French, Janet Braddock-Wilking, Joyce Y. Corey and Nigam P. Rath. Presented at the 38th Midwest Regional ACS Meeting, Nov 2003, Columbia.
114. Molecular receptors formed from 1,3,5-triaroylbenzene derivatives. Angela V. Schmitt, F. C. Pigge, Nigam P. Rath. Presented at the 38th Midwest Regional Meeting of the American Chemical Society, Columbia, MO, November, 2003.
115. Si-H bond activation reaction involving silicon heterocycles and Pt(0) complexes. Janet Braddock-Wilking, Joyce Y. Corey, Kevin Trankler, Lisa French and Nigam P. Rath. Presented at the 227th ACS National Meeting, March 2004, Anaheim, CA March 2004.
116. Polymorphism and pseudopolymorphism in 1,3,5-triaroylbenzenes. F. Christopher Pigge, V. S. Senthil Kumar, Nigam P. Rath. Presented at the 227th ACS National Meeting, Anaheim, CA, March 2004.
117. Functionalized cyclophanes via enamino-directed benzannulation/macrocyclization. F. Christopher Pigge, Angela V. Schmitt, Nigam P. Rath. Presented at the 227th ACS National Meeting, Anaheim, March 2004.
118. Synthesis, structure, spectroscopy, and reactivity of a neutral iridathiabenzene. John R. Bleeke, Monica Shokeen, Paul V. Hinkle, and Nigam P. Rath. Presented at the 228th

- ACS National Meeting, Philadelphia, PA, August 22-26, 2004 in Philadelphia.
119. Triarylbenzene: Super Molecules In Supramolecular Chemistry. Mayuri K. Dighe, F. Christopher Pigge, Nigam P. Rath. Presented at the 39th Midwest Regional Meeting of the American Chemical Society, Manhattan, KS, October 2004.
 120. Polymorphism in Some Organic and Organometallic Compounds. Invited lecture, Department of Chemistry, University of Missouri- Rolla, February, 2005.
 121. Activation of heavier group 14-hydrogen bonds with Pt-phosphine complexes. Janet Braddock-Wilking, Joyce Y. Corey, Lisa French, Colin White, Ngamjit Praingam, Nigam P. Rath. Presented at the 229th ACS National Meeting, San Diego, CA, March 2005.
 122. Synthesis, characterization, and electrochemical analysis of nitrosyl rhenacarborane complexes. Paul A Jelliss, Justin H Orlando, Nigam P. Rath, Michael Shaw. Presented at the 29th ACS National Meeting, San Diego, CA, March 2005.
 123. Polypyridyl complexes of ruthenacarboranes: Electrochemistry and photophysics. Paul A. Jelliss, Nigam P. Rath, Albert Vinson, John Harbison. Presented at the 29th ACS National Meeting, San Diego, CA, March 2005.
 124. Synthesis, structure, spectroscopy and reactivity of (thiapentadienyl)rhodium(phosphine) complexes. Monica Shokeen, Eric S. Wise, Nigam P. Rath, John R. Bleeke. 230th ACS National Meeting, Washington, DC, August 2005.
 125. The structure of the nido-undecaborate anion. L. Barton, O. Volkov, R. Li, Thomas K. Radacki, N. P. Rath. 230th ACS National Meeting, Washington, DC, August 2005.
 126. Non-steroidal compounds that reduce prostate-cancer cell proliferation with little or no feminizing effect. Cal Y. Meyers, Songwen Xie, Yuxing Hou, , Aaron W. McLean Laura Murphy, Stuart Adler, Todd Winters, Nancy Henry, Stefanie Ellis, Paul Robinson, Nigam P. Rath. 40th Midwest Regional Meeting of the American Chemical Society, Joplin, MO, United States, October 2005.
 127. Bidentate phosphine-borane complexes as chelating or bridging ligands. Lawrence Barton, Nigam P. Rath, Paul McQuade, Oleg Volkov, Mitsuhiro Hata. 40th Midwest Regional Meeting of the American Chemical Society, Joplin, MO, United States, October, 2005.
 128. Further Developments in Ruthenacarborane Chemistry: Using EPR and Spectroelectrochemistry to Probe Electronic Structure. Paul A. Jelliss, Justin H. Orlando, Nigam P. Rath, Michael J. Shaw. 57th Southeast/61st Southwest Joint Regional Meeting of the American Chemical Society, Memphis, TN, United States, November 2005.
 129. The Effect of Phosphine on SiH Bond Activation Reactions with Pt Complexes. Ngamjit Praingam, Janet Braddock-Wilking, Joyce Y. Corey, Nigam P Rath. 57th

- Southeast/61st Southwest Joint Regional Meeting of the American Chemical Society, Memphis, TN, United States, November 2005.
130. Luminescent carborane complexes for optoelectronic devices. Matthew J. Fischer, Paul A. Jelliss, Nigam P. Rath, Shelley D. Minter, Rensheng Luo. 231st ACS National Meeting, Atlanta, GA, United States, March 26-30, 2006.
 131. Synthesis, reactivity, and spectroelectrochemical analysis of rhenacarborane nitrosyl complexes. Paul A. Jelliss, Justin H. Orlando, Nigam P. Rath, Michael J. Shaw. 231st ACS National Meeting, Atlanta, GA, United States, March 26-30, 2006.
 132. Preparation and Reactivity of Silicon-Functionalized Siloles. Janet Braddock-Wilking, Yan Zhang, Joyce Y. Corey, Nigam P. Rath, R. Brett Cothran, Kevin A. Trankler. 38th Central Regional Meeting of the American Chemical Society, Frankenmuth, MI, May 16-20, 2006.
 133. Solid State Structure of 1,2,3-selenadiazole Derivatives. Nigam P. Rath, A. Marx, V. Manivanan and S. Muthusubramanian. Poster presentation, Annual meeting of the American Crystallographic Association, July 2006, Honolulu, HI.
 134. Synthesis and reactivity of substituted dihydrosilacyclopentadienes with Pt(0) phosphine complexes. Janet Braddock-Wilking, Yan Zhang, Joyce Y. Corey, Nigam P. Rath, R. Brett Cothran, Kevin A. Trankler. 232nd ACS National Meeting, San Francisco, CA, Sept. 10-14, 2006.
 135. Carbazole: Electronically and Geometrically Similar to the 9-Fluorenyl Anion. Aaron W. McLean, Yuqing Hou, Cal Y. Meyers, Nigam P. Rath. 41st Midwest Regional Meeting of the American Chemical Society, Quincy, IL, October 25-27, 2006.
 136. Nitrosyl bipyridyl rhenacarborane complexes: Synthesis, characterization, and prospective uses. Paul A. Jelliss, Xiaoming Shi, Justin H. Orlando, Nigam P. Rath, Michael J. Shaw. 233rd ACS National Meeting, Chicago, IL, March 25-29, 2007.
 137. Chemistry of iridium complexes and silane compounds. Todsapon Thananathanachon, John R. Bleeke, Nigam P. Rath. 233rd ACS National Meeting, Chicago, IL, March 25-29, 2007.
 138. Reactions of $\text{CH}_3\text{Mn}(\text{CO})_5$ with alkynes revisited: New reactivity from an old system. Michael J. Shaw, Adam J. Warhausen, Lemas Mitchell, Nigam P. Rath. 233rd ACS National Meeting, Chicago, IL, March 25-29, 2007.
 139. Effect of chelating phosphine ligands on SiH bond activation reactions at platinum. Janet Braddock-Wilking, Ngamjit Praingam, Nigam P. Rath. 233rd ACS National Meeting, Chicago, IL, United States, March 25-29, 2007.

140. Chemistry of iridium complexes and silane compounds. Todsapon Thananathanachon, John R. Bleeke, Nigam P. Rath. 233rd ACS National Meeting, Chicago, IL, United States, March 25-29, 2007.
141. Metallacarboranes – a new class of lumophores. Paul A. Jelliss, Steven Buckner, Matthew J. Fischer, Shelley D. Minter, Rensheng Luo and Nigam P. Rath Central regional Meeting, May 23-27, 2007.
142. Silver(I) Cyanoximates: Synthesis, Characterization and Applications. Nikolay Gerasimchuk, K. Domasevitch, Garrett Glover, David Lewis, N. Kent Dalley and Nigam P. Rath. Midwest Regional Meeting, November 7-10, 2007.
143. Progress toward the total synthesis of enantiomeric deoxycholic acid. Bryson W. Katona, Nigam P. Rath and Douglas F. Covey. 234th ACS National Meeting, Boston, MA, August 19-23, 2007.
144. Synthesis, characterization and applications of Silver(I) cyanoximates. Nikolay N. Gerasimchuk, Konstantin V. Domasevitch, N. Kent Dalley, Nigam P. Rath, Garrett Glover. 234th ACS National Meeting, Boston, MA, August 19-23, 2007.
145. Metallacarboranes - a new class of lumophores. Paul A. Jelliss, Steven Buckner, Matthew J. Fischer, Shelley D. Minter, Rensheng Luo, Nigam P. Rath. 39th Central Regional Meeting of the American Chemical Society, Covington, KY, United States, May 20-23 2007.

Research Supervision:

Jason A. Wilbur, Engelmann II Scholar, Summer 1990.
Adam T. Lassiter, Engelmann II Scholar, Summer 1991.
Gretchen E. Peterson, Engelmann II Scholar, Summer 1992.
Ryan M. Taylor, Engelmann II Scholar, Summer 1993.
Jason B. Goldman, Engelmann II Scholar, Summer 1994.
Julie M. Baker, Engelmann II Scholar, Summer 1996.
Christina M. Collins, REU student, 1996.
Verra L. Hilliard, STARS Student, 1999
Lawrence Lanos, STARS Student, 1999
Tim Ema, STARS Teacher Researcher, 1999
Christopher Burke, STARS Student, 2000
Catherine Whyte, STARS Student, 2000
Gretchen Gorline, STARS Teacher Researcher, 2000
David (Wei) Yan, STARS Student, 2002
Srikar Rao, STARS Student, 2002
Intelly Lee, STARS Student, 2003, 2004
Amir J. Ghodrati, STARS Student, 2004
Brett Carvallo, STARS Student, 2004
Jay Vora, STARS Student, 2005.

Research Grants and Contracts:

Single crystal X-Ray structure determination study of organic compounds, Monsanto Corporate Research and Searle, funded in 1993 and renewed 1994-2000.

Purchase of an X-Ray Diffractometer (PI: L. Barton, Chair, Chemistry), NSF Chemical Instrumentation Program, Contributor to the departmental Proposal, funded in Nov 1993.

Upgrading the computational facilities for the x-ray diffraction laboratory of the chemistry department, UM- St. Louis Research Awards Grant, funded in October 1995, \$7,300.

Upgrading the existing Silicon Graphics Computers in the x-ray diffraction laboratory of the chemistry department, UM- St. Louis Small Grants Fund, funded in April 1997, \$3,600.

Professional Development- To attend a two-day hands-on course on the use and system administration of the SGI Computer systems. UM- St. Louis Small Grants Fund, Submitted, February 1998, \$895.

Upgrading the CCD Diffractometer for the X-ray Diffraction Laboratory of the Department of Chemistry. UM- St. Louis Research Awards Grant, funded in March 1998, \$12,000.00 (maximum allowed amount).

Upgrading a Optiplex GXI Computer- Faculty Desktop Enhancement Initiative Request. UMSL-Senate Computer Committee, funded in December 1999, \$497.95.

Upgrade of a CCD-based X-ray Diffraction Laboratory (Departmental proposal, PI: G. K. Anderson, Chair, Chemistry) NSF- Chemical Instrumentation Grant, \$198,250, 2000, denied.

Enhancements to the x-ray diffraction laboratory of the department of chemistry. UMSL-Research Awards, \$12,440; funded amount- \$10,000, February 2000.

Non-equilibrium vapor pressure measurement on crystals (Co-PI), UM-Research Board, 2000, \$34,200, Denied.

Development of a CCD-based Regional X-ray diffraction Facility. NSF-MRI proposal, \$320,376; submitted, February 2001, Denied.

Professional Development grant, UMSL-small grants, \$965; (funded for \$895), April 2001.

Single crystal X-Ray structure determination study of organic and inorganic compounds Pharmacia Corporate Research, St. Louis. Collaborative research contract, 2002.

Small Grants Fund Request for attending National ACA Meeting, January 2002, \$1000.

Development of a CCD-based Regional X-ray diffraction Facility. NSF-MRI proposal, \$320,376; submitted, January 2002, Denied.

Improvements to the Bruker CCD X-Ray Diffraction System of the Department of Chemistry and Biochemistry, UMSL-Research Awards, \$12,400, submitted, Feb 2002, Denied.

Development of a Regional X-ray diffraction Facility. NSF-MRI proposal, \$317,400; submitted, January 2003, Denied..

Purchase of X-ray Collimation System for the Bruker CCD X-ray Diffractometer., Funded, \$10,00. Research Awards, April 2003.

Purchase of a CCD Diffractometer for the X-Ray Diffraction Laboratory of the Department of Chemistry and Biochemistry at UM- St. Louis. MO Research Board, \$50,520, Feb 2003, Denied.

Development of a Regional X-ray diffraction Facility. NSF-CRIF proposal, \$243,000; submitted, July 2003, Denied.

Purchase of xray software Xseed: small grants fund, \$1000. October, 2003.

Upgrade of a CCD based X-ray diffraction Laboratory, NSF-MRI proposal, \$180,226; Funded, July 2004.

Upgrade of the X-ray diffraction facility in the department of chemistry and biochemistry at UM- St. Louis, Missouri Research Board, \$59,572, funded, January, 2005.

Small Grants Fund, UMSL \$1000 (funded \$450), March 2006.

Service:

Chair, X-Ray Committee (Departmental), 2000 - present.

Member, X-Ray Committee (Departmental), 1990 - present.

Member, Instrumentation Committee (Departmental), 1992.

Member, Computer Committee (Departmental), 1991 to 1999.

Departmental Coordinator of VAX/VMS computing and networking

Member, Computer Committee for VAX/UNIX, University of Missouri- St. Louis.

Member, Senate Computer Committee works group, University of Missouri- St. Louis.

Co-organizer, American Crystallography Association Annual Meeting, St. Louis, 1997.

Organization Committee, American Chemical Society, 35th Regional Meeting, St. Louis, 2000.

Reviewer for Journals: Acta Crystallographica, Chem Commun., Organometallics, J. Chem. Ed.,

J. Chem Soc., Dalton., J. Am. Chem. Soc., Inorganica Chimica Acta

Reviewer for funding proposals: National Science Foundation, Missouri Research Board. ACS-Petroleum Research Fund