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Citations: https://scholar.google.com/citations?user=zjP0MPoAAAAJ&hl=en&oi=ao

Education

CMS College, Kottayam, Kerala University, India	B. Sc. (Special)
Indian Inst. Tech., Madras	M. Sc.
The Ohio State University (H. Shechter)	Ph. D.
Harvard University (R. B. Woodward)	Postdoctoral Fellow

Professional Experience

2009 -	Kimberly Professor of Chemistry, The Ohio State University
1995 - 2009	Professor of Chemistry, The Ohio State University
1980 – 1994	Member of Research Staff and Research Fellow, DuPont Central Research

Notable Honors

Distinguished Alumnus, Indian Institute of Technology, Madras 2008
American Association for the Advancement of Science, Fellow 2012
Chemical Research Society of India Medal, 2013

I. Publications: Research Summaries

Reviews in Periodicals

25. "In Pursuit of an Ideal Carbon-Carbon Bond-Forming Reaction. The Hydrovinylation of Alkenes", RajanBabu, T. V. *Synlett* **2009,** 853-885. doi: 10.1055/s-0028-1088213.

24. "Asymmetric Hydrovinylation Reaction", RajanBabu, T. V. *Chem. Rev.* **2003**, *10,* 2845-2860.

23. "Asymmetric Catalysis in Water: Prospects and Problems of Using Hydroxyphosphines and Hydroxyphosphinites as Ligands", RajanBabu, T. V.; Yan, Y. Y.; Shin, S. *Curr. Org. Chem.* **2003**, *7,* 1759-1773.

22. "Ligand Tuning as a Tool for the Discovery of New Catalytic Asymmetric Processes", RajanBabu, T. V.; Casalnuovo, A. L.; Ayers, T. A.; Nomura, N.; Jin, J.; Park, H.; Nandi, M. *Curr. Org. Chem.* **2003***, 7,* 301-316.

21. "Controlling Asymmetric Catalyzed Reactions through Ligand Effects", RajanBabu, T. V. *Chimicaoggi*, March/April **2000,** pp 26-31.

20. "Electronic Effects in Asymmetric Catalysis: Enantioselective Carbon-Carbon Bond Forming Processes", RajanBabu. T. V.; Casalnuovo, A. L. *Pure Appl. Chem.* **1994**, 66, 1535-1543.

19. "Stereochemistry of Intramolecular Free-Radical Cyclization Reactions," RajanBabu, T. V. *Acc. Chem. Res.* **1991**, *24*, 139-145.

18. "'One-Electron Versus Two-Electron' Cyclizations Mediated by Ti and Zr Reagents," Nugent, W. A.; RajanBabu, T. V.; Taber, D. F. *Chemica Scripta*, **1989,** *29*, 439-442.

17. "Organometallic Methods in Organic Synthesis in Industry," Parshall, G. W.; Nugent, W. A.; RajanBabu, T. V. *Chemica Scripta*, **1987**, *27*, 527-528.

Reviews in Book Chapters

18. "Reaction of Epoxides Mediated by Low-Valent Titanium Reagents", Nugent, W. A.; Halder, S.; RajanBabu, T. V. *Org. React.* **2017** (invited article under preparation).

17. "Hydrovinylation Reactions in Organic Synthesis", RajanBabu T.V.; Adam Cox G.; Lim H.J.; Nomura N.; Sharma R.K.; Smith C.R.; and Zhang A. in Gary A. Molander and Paul Knochel (eds.), *Comprehensive Organic Synthesis*, *2nd edition*, Vol. 5, Oxford: Elsevier; 2014. pp. 1582-1620. DOI: 10.1016/B978-0-08-097742-3.00533-4.

16. "Hydrocyanation in Organic Synthesis", RajanBabu T.V. in Gary A. Molander and Paul Knochel (eds.), *Comprehensive Organic Synthesis, 2nd edition*, Vol. 5, Oxford: Elsevier; 2014. pp. 1772-1793. doi:10.1016/B978-0-08-097742-3.00537-1

15. "Asymmetric Hydrovinylation of Alkenes", RajanBabu, T. V. in *Asymmetric Synthesis. More Methods and Applications,* Christmann, D.; Bråse, S., Eds. Wiley: Weinheim**,** 2012**.** pp 293-301. 10.1002/9781118299715.ch5

14. "Phosphinite and Phosphonite Ligands", RajanBabu, T. V. in *Phosphorus (III) Ligands in Homogeneous Catalysis- Design and Synthesis,* Kamer, P. C. J.; van Leeuwen, P., Eds. Wiley: London, 2012**.** pp. 159-232. doi: 10.1002/9781118299715.ch5

13. "Enantioselective Hydrovinylation of Alkenes", RajanBabu, T. V.; Smith C. R. *Comprehensive Chirality*, Yamamoto, H.; Carreira E., Eds*.* Elsevier: London, 2012, Vol. 5, pp. 355-398. http://dx.doi.org/10.1016/B978-0-08-095167-6.00518-8

12. "Hydrocyanation of Alkenes and Alkynes", RajanBabu, T. V. *Org. React.* **2011**, *75*, 1-72. doi: 10.1002/0471264180.or075.01

11. RajanBabu, T. V.; Shin, S. "Reductions in Aqueous Media" in *Organic Reactions in Water;* U. M. Lindstrôm, U. M., Ed.; Blackkwell: London, 2007. pp185-214.

10. Casalnuovo, A. L.; RajanBabu, T. V. "Transition-Metal-Catalyzed Alkene and Alkyne Hydrocyanations", in *Transition Metals for Organic Synthesis and Fine Chemicals,* Beller, M., Bolm, C ., Eds.; VCH, Manheim 2006.

9. RajanBabu, T. V. "Trimethylsilyltributylstannane", in *Electronic Encyclopedia of Reagents for Organic Synthesis;* Paquette, L. A., Ed.; John Wiley and Sons: New York, 2005. DOI: 10.1002/047084289X.rn00647

8. "Hydrocyanation of Carbon-Carbon Double Bonds", in *Comprehensive Asymmetric Catalysis*; Jacobsen, E. N.; Pfaltz, A.; Yamamoto, H. Eds.; Springer: Berlin, 1999; vol. 1, pp. 365-378.

7. "Hydrovinylation of Carbon-Carbon Double Bonds", RajanBabu, T. V. in *Comprehensive Asymmetric Catalysis,* Jacobsen, E. N.; Pfaltz, A.; Yamamoto, H., Eds.; Springer: Berlin, 1999; vol. 1, pp 415-427.

6. "Practical Catalysts for Asymmetric Synthesis: Ligands from Natural Sugars for Rhodium-Catalyzed Asymmetric Synthesis of *D*- and *L*- Amino Acids", In *Process Chemistry in Pharmaceutical Industry* , Gadamasetti, K. G. ., Ed.; Marcel Dekker, New York 1999; p. 327.

5. "Functionalized Carbocyclic Derivatives from Carbohydrates: Free Radical and Organometallic Methods", RajanBabu, T. V. in *Modern Methods in Carbohydrate Chemistry,* Hanessian, S, Ed.; Marcel Dekker, New York, 1997; p 545.

4. "Ligand Tuning in Asymmetric Catalysis: Hydrocyanation and Hydrogenation Reactions", RajanBabu, T. V.; Casalnuovo, A. L.; Ayers, T. A. In *Advances in Catalytic Processes*, Doyle, M., Ed.; JAI Press, Greenwhich 1998; Vol. 2, p. 1.

3. "The Asymmetric Hydrocyanation of Vinylarenes", Casalnuovo, A. L.; RajanBabu, T. V. in *Chirality in Industry II,* Collins, A. N.; Sheldrake, G. N.; Crosby, J. Ed.; John Wiley and Sons: Chichester 1996; p 309.

2. Casalnuovo, A. L.; RajanBabu, T. V.; Warren, T. "Asymmetric Hydrocyanation of Vinylarenes" in *Catalysis of Organic Reactions*; Scaros, Ed.; Marcel Dekker, New York, 1994; p 569-574.

1. "Recent Advances in the Chemistry of Natural Products," Woodward, R. B. et al in *Frontiers in Bioorganic Chemistry and Molecular Biochemistry*, Ovchinnikov, Yu. A. and Kolosov, M. N., Ed.; Elsevier/North Holland Biomedical Press: 1979. (A partial summary of the post-doctral work).

II. Publications: Original, Peer-Reviewed (H index 53)

110. "Control of Selectivity through Synergy between Catalysts, Silanes and Reaction Conditions in Cobalt- Catalyzed Hydrosilylation of Dienes and Terminal Alkenes", Raya, B.; Jing, S. T. V. RajanBabu, *ACS Catal.* **2017**, *7,* 2275-2283. **DOI:** 10.1021/acscatal.6b03373.

109. "Selective Cobalt-Catalyzed Reduction of Terminal Alkenes and Alkynes Using $(EtO)_2Si(Me)H$ as a Stoichiometric Reductant", Raya, B.; Biswas, S.; RajanBabu, T. V. *ACS Catal.* **2016**, *6*, 6318-6323.

108. "Russian Nesting Doll Complexes of Molecular Baskets and Zinc Containing TPA Ligands", Zhiquan, L.; Polen, S.; Hadad, C. M.; RajanBabu, T. V.; Badjić , J. D. *J. Am. Chem. Soc.* **2016**, *138*, 8253-8258.

107. "Asymmetric Catalysis with Ethylene. Synthesis of Functionalized Chiral Enolates", Biswas, S.; Page, J. P.; Dewese, K. R.; RajanBabu, T. V. *J. Am. Chem. Soc.,* **2015**, 137, 14268-14271. DOI: 10.1021/jacs.5b10364 PubMed PMID: 26529467. PubMed Central PMCID: PMC4869691.

106. "Cobalt-Catalyzed Hydrovinylation of 1,3-Dienes", Timsina, Y. N., Sharma, R. K.; RajanBabu, T. V. *Chem. Sci.* **2015**, *6*, 3994-4008. DOI: 10.1039/c5sc00929d PMC4587399.

105. " On the Coupling of Propylene Oxide and Lactide at a Porphyrin Chromium (III) Center", Balasanthiran, V.; Chatterjee, C.; Chisholm, M. H.; Harrold, N. D.; RajanBabu, T. V.; Warren G. A. *J. Am. Chem. Soc.* **2015**, *137,* 1786. DOI: 10.1021/ja512554t

104. "Triarylphosphine Ligands with Hemilabile Alkoxy Groups: Ligands for Nickel(II)-Catalyzed Olefin Dimerization Reactions. Hydrovinylation of Vinylarenes, 1,3-Dienes, and Cycloisomerization of 1,6-Dienes", Biswas, S.; Zhang, A.; Raya, B.; RajanBabu, T. V. *Adv. Synth. Catal.* **2014**, *356*, 2281-2292. DOI: 10.1002/adsc.201400237). NIHMSID #639781

103. "Chemoselective Reactions of (*E*)- 1,3-Dienes: Cobalt-Mediated Isomerization to (*Z*)- 1,3-Dienes and Reactions with Ethylene", Timsina, Y.; Biswas, S.; RajanBabu, T. V. *J. Am. Chem. Soc.* **2014**, *136,* 6215-6218. DOI: dx.doi.org/10.1021/ja501979g PMCID# PMC4046774.

102. "Bimetallic Catalysis in the Highly Stereoselective Ring-Opening Reactions of Aziridines", Wu, B.; Gallucci, J. C.; Parquette, J. R.; RajanBabu, T. V. *Chem. Sci.* **2014**, *5*, 1102-1117. doi: 10.1039/c3sc52929k

101. "Highly Efficient Catalytic Dimerization of Styrenes via Cationic Palladium(II) Complexes", Choi, J. H.; Kwon, J. K.; RajanBabu, T. V.; Lim, H. J. *Adv. Synth. Catal.* **2013**, *355*, 3633-3638. doi: 10.1002/adsc.201300864.

100. "Conformation and reactivity in dibenzocyclooctadienes (DBCOD). A general approach to the total synthesis of fully substituted DBCOD lignans via borostannylative cyclization of α,ω-diynes" Gong, W.; RajanBabu, T. V. *Chem. Sci.* **2013**, *4*, 3979-3985. doi: 10.1039/C3SC51751A.

99. "Asymmetric Hydrovinylation of 1-Vinylcycloalkenes. Reagent Control of Regio- and Stereoselectivity", Page, J. P.; RajanBabu, T. V. *J. Am. Chem. Soc.* **2012**, *134*, 6556-6559. doi: dx.doi.org/10.1021/ja301640e

98. "Asymmetric Hydrovinylation of Vinylindoles. A Facile Route to Cyclopenta[*g*]indole Natural Products (+)-*cis*-Trikentrin A and (+)-*cis*-Trikentrin B" Liu, W.; Lim, H. J.; RajanBabu, T. V.*J. Am. Chem. Soc.* **2012**, *134*, 5496-5499. doi: dx.doi.org/10.1021/ja3004733.

97. "On the stereochemistry of acetylide additions to highly functionalized biphenylcarbaldehydes and multi-component cyclization of 1,n-diynes. syntheses of dibenzocyclooctadiene lignans", Gong, W.; Singidi, R. R.; Gallucci, J. C.; RajanBabu, T. V. *Chem. Sci.* **2012**, *3*, 1221–1230. DOI: 10.1039/c2sc00920j.

96. Ethylene in Organic Synthesis: A New Route to Anticholenergic Pyrrolidinoindolines, and Other Molecules with All Carbon-Quaternary Centers via Asymmetric Hydrovinylation, Hwan Lim, RajanBabu, T. V. *Org. Lett.* **2011**, *13*, 6596-6599.

95. "Ethylene in Organic Synthesis. Repetitive Hydrovinylation of Alkenes for Highly Enantioselective Syntheses of Pseudopterosins", Mans, D. J.; Cox, G. A.; RajanBabu, T. V. *J. Am. Chem. Soc.* **2011**, *133*, 5776–5779. doi: dx.doi.org/10.1021/ja201321v

94. "Reactivity and Selectivity in Hydrovinylation of Strained Alkenes", Liu, W.; RajanBabu, T. V. *J. Org. Chem.* **2010**, *75*, 7636-7643.

93. "Stereoselective Cyclization of Functionalized 1,n-Diynes Mediated by [X-Y]- Reagents [X-Y = R_3Si-SnR'_3 or $(R_2N)_2B$-SnR'_3]. Synthesis and Properties of Atropisomeric 1,3-Dienes", Singidi, R. R.; Kutney, A. M.; RajanBabu, T. V. *J. Am. Chem. Soc.* **2010**, *132*, 13078-13087.

92. "Borostannylation of Alkynes and Enynes. Scope and Limitations of the Reaction and Utility of the Adducts", Singidi, R. R.; RajanBabu, T. V. *Org. Lett.* **2010**, *12*, 2622-2625. doi: 10.1021/ol100824f

91. "Annulated Diketopiperazines from Dipeptides or Schöllkopf Reagents via Tandem Cyclization-N-Arylation", Lim. H. J.; RajanBabu, T. V. *Org. Lett.* **2010**, *12*, 2162-2165.

90. "Asymmetric Hydrovinylation of Unactivated Linear 1,3-Dienes", Sharma, R. K;. RajanBabu, T. V. *J. Am. Chem. Soc.* **2010**, *132*, 3295-3297. doi: 10.1021/ja1004703.
http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2836389/

Highlight: "Asymmetric Hydrovinylation of 1,3-Dienes", *Synfacts* **2010**, 6, 0672. doi 10.1055/s-0029-1219871;
Highlight: "Cobalt-Catalyzed Asymmetric Hydrovinylation" *Angew. Chem. Int. Ed.* **2010**, *49,* Pages: 7166-7168. doi: 10.1002/anie.201003133.

89. "Mechanism and Stereoselection in a Y-Catalyzed Transacylation Reaction. A Computational Modeling Study", Sanan, T.; RajanBabu, T. V.; Hadad, C. M. *J. Org. Chem.* **2010**, *75*, 2369-2381.

88. "Low Pressure Vinylation of Aryl and Vinyl Halides via Heck-Mizoroki Reactions Using Ethylene", Smith, C. R.; RajanBabu, T. V. *Tetrahedron: Symposium-in-Print*, **2010**, *66,* 1102-1110.

87. "Regiodivergent Ring Opening of Chiral Aziridines", Wu, B.; Parquette, J. R.; RajanBabu, T. V. *Science* **2009**, *326*, 1662. Highlights: "*Chemical and Engineering News* (ACS: http://pubs.acs.org/cen/news/87/i51/8751notw4.html) and *Chemistry World* (Royal Society of Chemistry: http://www.rsc.org/chemistryworld/News/2009/December/17120903.asp).

86. "Seleniranium Ion-Triggered Reactions - Novel Aspects of Friedel-Crafts and *N*-Detosylative Cyclizations", Lim, H. J.; RajanBabu, T. V. *Org. Lett.* **2009**, *11*, 2924-2927.

85. "Facile Pd(II)- and Ni(II)-Catalyzed Isomerization of Terminal Alkenes into 2-Alkenes", Lim, H. J.; Smith, C. R.; RajanBabu, T. V. *J. Org. Chem.* **2009**, *74*, 4565-4572.

84. "Tunable Phosphoramidite Ligands for Asymmetric Hydrovinylation: Ligands par excellence for Generation of All-Carbon Quaternary Centers", Smith, C. R.; Lim, H. J.; Zhang, A.; RajanBabu, T. V. *Synthesis* **2009**, 2089-2100.

83. "A Theoretical Investigation of the Mechanism of Ni(II)-Catalyzed Hydrovinylation of Styrene", Joseph, J.; RajanBabu, T. V.; Jemmis, E. D. *Organometallics.* **2009**, *28*, 3552-3566.doi: 0.1021/om900045p

82. "Catalytic Asymmetric Synthesis Using Feedstocks. An Enantioselective Route to 2-Arylpropionic Acids and 2-Arylethyl Amines via Hydrovinylation of Vinylarenes", Smith, C. R.; RajanBabu, T. V. *J. Org. Chem.* **2009**, *74*, 3066-3072.

81. "Enantioselective Desymmetrization of *meso*-Aziridines by $TMSN_3$ and TMSCN Catalyzed by Discrete Yttrium Complexes", by Wu, B.; Parquette, J. R.; RajanBabu, T. V. *Angew. Chem. Int. Ed. Engl.* **2009**, 48*,* 1126-1129. PMID: 19021173.

80. "In Pursuit of an Ideal Carbon-Carbon Bond-Forming Reaction. The Hydrovinylation of Alkenes", RajanBabu, T. V. *Synlett* **2009,** 853-885.

79. "Catalyzed Cyclizations Leading to Enrichment of Functionality and Chirality. A General Approach to Dibenzocyclooctadiene Lignans from α,ω-Diynes", Singidi, R. R.; RajanBabu, T. V. *Org. Lett.* **2008**, *10*, 3351-3354.

78. "Conformationally Driven Asymmetric Induction in a Catalytic Dendrimer", Yu, J.; RajanBabu, T. V.; Parquette, J. R. *J. Am. Chem. Soc.* **2008,** *130*, 7845-7847. Highlight: http://www.nature.com.proxy.lib.ohio-state.edu/nchem//reshigh/2008/0608/full/nchem.22.html

77. "Efficient, Selective and Green: Catalyst Tuning for Highly Enantioselective Reactions of Ethylene", Smith, C. R.; RajanBabu, T. V. *Org. Lett.* **2008**, *10*, 1657-1659.

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73. "Exceptionally Active Yttrium-Salen Complexes for the Catalyzed Ring Opening of Cyclohexene Epoxide by TMSCN and $TMSN_3$", Saha, B.; Lin, M- H.; RajanBabu, T. V *J. Org. Chem.* **2007**, *72*, 8648-8655.

72. "Syntheses and Applications of 2-Phosphino-2′-alkoxy-1,1′-binaphthyl Ligands. Development of a Working Model for Asymmetric Induction in Hydrovinylation Reactions", Saha, B.; RajanBabu, T. V. *J. Org. Chem.* **2007**, *72*, 2357-2363.

71. "Nickel(0)-Catalyzed Asymmetric Hydrocyanation of 1,3-Dienes", Saha, B.; RajanBabu, T. V. *Org. Lett.* **2006**, *8*, 4657-4659.

70. "All Carbon Quaternary Centers via Asymmetric Hydrovinylation. New Approaches to the Exocyclic Side Chain Stereochemistry Problem", Zhang, A.; RajanBabu, T. V. *J. Am. Chem. Soc.* **2006**, *128*, 5620-5621.

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Publications: Graduate Research

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Long Abstracts in Proceedings

7. "Water-Soluble Ligands from Carbohydrates for Asymmetric Catalysis", RajanBabu, T. V.; Yan, Y.-Y.; Shin, S. Proceedings of the 2nd International Conference on Green and Sustainable Chemistry, Washington, DC, June 20-24, 2005, p. 25.

6. "The Asymmetric Hydrovinylation Reaction: Ethylene as Carbon Source for the Synthesis of Fine Chemicals", RajanBabu, T. V.; Nomura, N.; Park, H.; Nandi, M.; Jin, J.; Sun, X. *Proc. Nat. Acad. Sci. (India)* **2003**, *68A,* 417-422.

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4. "New Protocols for the Utilization of Ethylene and Propylene for Fine Chemical Synthesis", *Proceedings of the 3rd Annual Green Chemistry and Engineering Conference*, American Chemical Society, Washington, D. C. June 29-July 1, 1999.

3. "Control Elements in Asymmetric Catalysis", *Chiral USA 1998*, Proceedings, San Francisco, CA, May 18-19, 1998.

2. "Sugar Diphosphinites as Ligands for Ni-Catalyzed Enantioselective Allylation Reactions: Quasi-Enantiomeric Relationship of Ligands Derived from D-Glucose", Ayers, T. A.; RajanBabu, T. V.; Casalnuovo, A. L. *OrganoMetallic Chemistry directed towards Organic Synthesis*, OMCOS Proceedings, Santa Barbara, 1995, p. 89.

1. "Electronic Effects in Enantioselectivity", RajanBabu, T. V.; Casalnuovo, A. L.; Ayers, T. A.; Karel, K. J. *Chirality Europe '94,* Proceedings, Spring Innovations, Bramhall, UK. 1994, pp 41-45.

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9. RajanBabu, T. V. "Dibenzoyl Peroxide", in *Encyclopedia of Reagents for Organic Synthesis;* Paquette, L. A., Ed.; John Wiley and Sons: New York, 1995, vol. 3, pp 1529-1532.

8. RajanBabu, T. V.; Simpkins, N. S. "1,1-D-*t*-butyl Peroxide" in *Encyclopedia of Reagents for Organic Synthesis* Paquette, L. A. , Ed.; John Wiley and Sons, New York, 1995, vol. 3, pp 1616-1621.

7. RajanBabu, T. V. "Di-*n*-butyltin Oxide", in *Encyclopedia of Reagents for Organic Synthesis;* Paquette, L. A., Ed.; John Wiley and Sons: New York, 1995, vol. 3, pp 1629-1631.

6. RajanBabu, T. V. "Electrochemical Methods", in *Encyclopedia of Reagents for Organic Synthesis;* Paquette, L. A., Ed.; John Wiley and Sons: New York, 1995, vol. 4, pp 2321.

5. RajanBabu, T. V. "Galvinoxyl", in *Encyclopedia of Reagents for Organic Synthesis;* Paquette, L. A., Ed.; John Wiley and Sons: New York, 1995, vol. 4, pp 2605.

4. RajanBabu, T. V. "Ketene Bis(trimethylsilyl) Acetal", in *Encyclopedia of Reagents for Organic Synthesis;* Paquette, L. A., Ed.; John Wiley and Sons: New York, 1995, vol. 4, pp 2932-2934.

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13. "Enantioselective hydroformylation", US Patent 5 574 171, 1996.
12. "Chiral, bidentate organophosphorus ligand", US Patent 5 510 470, 1996.

11. "Selective asymmetric hydrogenation of dehydroamino acid derivatives using rhodium and iridium diphosphinite carbohydrate catalyst compositions", US Patent 5 510 507, 1996.
10. "Organophosphorus saccharide nickel catalyst", US Patent 5 484 902, 1996.
9. "Selective asymmetric hydrogenation of dehydroamino acid derivatives using rhodium and iridium diphosphinite carbohydrate catalyst compositions", US Patent 5 481 006, 1996.
8. "Enantioselective hydroformylation", US Patent 5 475 146, 1995.
7. "Enantioselective hydrocyanation of aromatic vinyl compounds", US Patent 5 531 129, 1994.
6. "Enantioselective hydrocyanation of aromatic vinyl compounds", US Patent 5 175 335, 1992.
5. "Nitroaryl carbonyl compounds, nitrodihydroaryl carbonyl intermediates thereto, and processes", US Patent 5 164 499, 1992.
4. "Process for preparation of alkoxycarbonyloxystyrene", US Patent 5 082 965, 1992.
3. "Processes for making nitroaryl carbonyl compounds and nitrodihydroaryl carbonyl intermediates thereto", US Patent 4 912 220, 1990.
2. "Nitroaryl carbonyl compounds, nitrodihydroaryl carbonyl intermediates thereto, and processes", US Patent 4 743 690, 1988.
1. "Process of preparing nitrodihydroaryl carbonyl compounds", US Patent 4 659 862, 1987.

Partial List of Invited Talks / Plenary Lectures (since 2000)

Meetings/Conferences

21st International Conference on Organic Synthesis, IIT Bombay December 11-16, 2016.
Current Methodologies in Organic Synthesis, A symposium Honoring Prof. E. Negishi, MG University, Kottayam, India. Feb 13, 2016.

249th National ACS Meeting, Denver CO *Symposium on Cross-Coupling Reactions,* March 22-26 2015.
15th National Symposium in Chemistry (NSC-15), Banaras Hindu University, India Feb 1-3, 2013.
Organometallic Compounds and their Industrial Applications, KIIT University, Bhubaneswar, India 5th-7th February 2013.
International Symposium on Chemistry and Chemical Biology of Natural Products, Indian Institute of Chemical Technology, Hyderabad, India, Aug 03-Aug 5, 2012.
Symposium on Supramolecular Catalysis, The International Chemical Congress of Pacific Basin Societies, Honolulu, Hawaii, December 15, 2010.
Tetrahedron Symposium, National ACS Meeting, Boston, August 23, 2010
P. C. Dutta Memeorial Lecture, Indian Association of the Cultivation of Science, August 17, 2009
Brown-Negishi Lecture, Purdue University October 13, 2008
Foster Colloquium, State University at Buffalo February 8, 2008
Roche Distinguished Lecture, Colorado State University, April 30, 2007
Netherlands' Catalysis and Chemistry Conference, Noordwijkerhout, Netherlands, March 7-9, 2005.
2nd International Conference on Green and Sustainable Chemistry, Washington, DC., June 20-24, 2005.
NSF(US)-DST(India) Joint Workshop in Organometallic and Polymer Chemistry, Chennai, India, December 10-12, 2003

Symposium on Synthetic Methodology, Central ACS Meeting, Pittsburgh, October 20-22, 2003
Gordon Research Conference in Organometallic Chemistry, New Port, RI, July 20-24, 2003
38th EUCHEM Conference on Stereochemistry, Bürgenstock, Switzerland, April 26-May 2, 2003
Symposium on Organometallic Chemistry in Carbohydrates, 225th ACS National Meeting, New Orleans, LA March 23-27, 2003
Gordon Research Conference in Organic Reactions and Processes, Roger Williams University, RI, July 21-25, 2002
New Methodologies in Asymmetric Catalysis, Symposium at the 223rd ACS National Meeting,. Orlando, FL April 7-11, 2002
Process Chemistry in the Pharmaceutical Industry, ACS **Pro**Spectives Conference, Barcelona, Spain, February 24-27, 2002
5th Annual Green Chemistry and Engineering Conference, Washington, D. C. June 26-28, 2001
Symposium on Organic Reactions in Aqueous Media, PACIFICHEM, Hawaii, December 15, 2000
Symposium on Discovery and Development of Asymmetric Synthesis and Chiral Technology PACIFICHEM, Hawaii, December 16, 2000
Symposium on *Organometallic Chemistry in Organic Synthesis*, 35th Midwest Regional ACS Meeting, St. Louis, MO, October 27, 2000
"*Environmentally Benign Chemistry for the 21st Century"*, 2000 Fall Symposium, Rochester Section ACS, October 20, 2000
Symposium on *Synthetic and Mechanistic Organometallic Chemistry* 220th National ACS Meeting, Washington, DC, August 23, 2000

Selected Talks at Universities

University of Alabama
University of Alberta
University of Bonn
Brandeis University
University of California (Riverside)
University of California (Davis),
Case Western Reserve University
Central University (Hyderabad, India)
Colorado State Univ. (2 visits, Roche Lecturer, 2007)
Cornell University
University of Chicago
University of Cincinnati
Columbia University
University of Darmstadt (Germany)
University of Science and Technology Eindhoven (Netherlands)
Ecole Polytechnique (Paris)
University of Illinois at Chicago Circle
Imperial College (UK)
Indian Inst. Science (Bangalore)
India Inst. Tech. (Madras, Bombay, India)

Indian Institute of Science Education and Research, Pune, India
Indian Institute of Science Education and Research, Thiruvananthapurum, India
Indiana University
University of Kentucky,
University of Louisville
Indian Association of Cultivation of Science (Kolkata, India)
Mass. Inst. Tech. (2 invitations)
Miami University (OHIO)
University of Montreal
University of Munster (Germany)
Nagoya University (Japan)
National Chemical Laboratories
Nottingham (UK)
Oxford University (UK)
Pennsylvania State University
University of Pittsburgh (2 visits)
Purdue (2 visits, Negishi-Brown Lecture 2008)
Presidency College (Kolkata, India)
Princeton
Regional Research Laboratories
University of Rostock (Germany)
University of Miami, FL
University of Texas (Austin)
University of West Virginia
University of Wisconsin, Madison
The Scripps Research Institute
Tokyo Inst. Tech. (Tokyo, 2 visits, Visiting Professor)
Washington State University
Wayne State University

Talks at Industries/Research Centers

Sepracore, Mitsui Company (Tokyo, Japan) Promerus, Dow (Midland), Albemarle, Atofina, Aventis Pharmaceuticals, Johnson-Matthey, Chiroscience (UK), DuPont (2 visits), Pharmazia-Upjohn (2), Allied Signal, Abbott Pharmaceuticals (Skokie), Park Davies (Ann Arbor), Eli Lilly (Indianapolis), Lilly Development Centre (Mont-Saint Guibert, Belgium), Smith Kline Beecham (Philadelphia), Merck (Rahway, 3 visits), Bristol-Myers/Squibb (3 visits), Schering-Plough, Ethyl Corp. (2 visits), Pfizer (Groton, 2 visits), Kodak (2)

Service to the Profession (outside Ohio State University)

ACS Awards Panel (Organic Division, 2015-current)
Member External Academic Review Committee, IISER Pune (2014)
Member, Board of Editors, Organic Reactions (1996- 2007)

Member NIH Study Sections 2001, 2005, 2008, 2009, 2015, 2016
Member, NSF Review Panels 2009, 2011, 2012, 2013, 2014
NSF Review Panel for Career Proposals 2008, 2013
Visiting Professor, Tokyo Institute of Technology, 2004,
Visiting Professor, Indian Institute of Technology, Bombay 2009
Visiting Professor, Indian Institute of Sc Ed and Res (IISER, Thiruvananthapurum)
Member, Advisory Panel OMCOS 1995
Chairman, Gordon Research Conference on Organic Reactions and Processes 1991
Reviewer NSF, PRF, Research Corp Proposals, NSF EPSOR program, SS Bhatnagar Award Applications (HRD, Govt. of India)

Past Industry Support

Dupont Company
Vertex Pharmaceuticals
Chemtex Inc.

Current Research Support

The Ohio State University- Kimberly Endowment (2009-2017)
National Science Foundation (CHEM-1362095) [2014-2017]
National Institute of Health (R01GM108762) [2015-2019]