

CURRICULUM VITAE

Binay Krishna Ghorai

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I. PERSONAL INFORMATIONS

EMPLOYMENT:

Professor **30.06.2010 – present**

Department of Chemistry, Indian Institute of Engineering Science and Technology, Shibpur, Howrah (Formerly, Bengal Engineering and Science University, Shibpur)

Associate Professor **18.05.2007 – 29.06.2010**

Department of Chemistry, Bengal Engineering and Science University, Shibpur, Howrah

Assistant Professor **18.05.2004 – 17.05.2007**

Department of Chemistry, Bengal Engineering and Science University, Shibpur, Howrah

Lecturer **18.05.1995 – 17.05.2004**

Department of Chemistry, Bengal Engineering College (A Deemed University), Shibpur, Howrah

POST Ph.D. RESEARCH EXPERIENCE:

Post Doctoral Fellow **09/2000 – 8/2002**

Department of Chemistry and Biochemistry, New Mexico State University, NM, USA
Advisor: **Professor J. W. Herndon**

Research Associate **12/1994 – 5/1995**

Department of Chemistry, Indian Institute of Technology, Kharagpur, India

EDUCATION:

Ph.D. **Chemistry** **01/1995** **Indian Institute of Technology, Kharagpur**

*Thesis: Studies on Alder-Ene Reactions and σ -Allylmetallics of Silicon: Total Synthesis of Cyclopentanoid Natural Products. Advisor: **Professor T. K. Sarkar***

M.Sc. **Chemistry** **1989** **Indian Institute of Technology, Kharagpur**

B.Sc. (Hons) **Chemistry** **1986 (result published in 1987)** **Calcutta University**

II. ACADEMIC ACTIVITIES

A. Research Area of Interest

Synthetic Organic and Organometallic Chemistry, Natural Product Synthesis, Heterocyclic Chemistry, Molecular Design and Synthesis of Organic π -Conjugated Materials for Optoelectronic & Bio-sensing Applications.

B. Visit to Institutions in abroad

- **September 2000 - August 2002:** Department of Chemistry and Biochemistry, **New Mexico State University, New Mexico, USA**, as a **Postdoctoral Fellow**.

C. Special Recognitions and Achievements

1. Our research paper: T. K. Sarkar, **B. K. Ghorai**, S. K. Nandy, B. Mukherjee and A. Banerji, "Stereochemical Control over three Contiguous Stereogenic Center in the Intramolecular Ene Reaction of activated 1,6-Dienes. Application to the Synthesis of (\pm)- Methyl Cucubate and (\pm)- Methyl Epijasmonate", *J. Org. Chem.*, **1997**, 62, 6006-6011, **cited in the popular text book in B.Sc. & M.Sc. level.** [F. A. Carey, R. J. Sundberg. *Advanced Organic Chemistry, part B*, 4th edn.; Kluwer Academic/Plenum Publishers: New York, 2001, pp402.
2. Our research paper: T. K. Sarkar and **B. K. Ghorai**, " Silicon-directed Bamford Stevens Reactions of β - Trimethylsilyl N-Aziridinylimines", *J. Chem. Soc., Chem. Commun.*, **1992**, 1184-1185, **included in the teaching material (Chem 206) at Harvard University by Professor David Evans.**
3. Our paper entitled "Three-component one-pot synthesis of isoquinolines and acridines", **awarded (Prof. P. Sengupta Memorial Award)** at 46th *Annual Convention of Chemists and International Conference on Recent Trends in Chemical Sciences* at VIT University, Vellore, TN, India, December 02-06, **2009**, Abstract No. ORG(AP)-1.
4. Our poster entitled "Annulation of furan-bridged 10-membered rings on *N*-heterocycles through [8+2]-cycloaddition of dienylazaisobenzofurans and dimethyl acetylenedicarboxylat", **awarded First** in the section Organic Synthesis and Methodology at *International symposium on Recent Trends of Research in Chemistry* at Midnapore College, Paschim Medinipur, India, October 31-November 1, **2011**, Poster No. 21, page 37.
5. Our poster entitled "Synthesis and photophysical properties of stilbenoid compounds" **Awarded 2nd** best poster award at *Recent advances in selected topics of Chemistry-II and International year of Chemistry-2011* at this University held during March 24-25, 2011.

6. Citation index as per Scopus Citation search: (as on 01.02.2019)

Total Citations: 485

h-index: 14

i-index: 24

7. Reviewer: Chemical Review, ACS Appl. Mater. Interfaces, Tetrahedron letters, Molecular Diversity, Synthetic Metals, Chinese Journal of Organic Chemistry, Journal of Heterocyclic Chemistry, Synthetic Communications, Brazilian Journal of Chemical Society, Acta Chimica Slovenica, Indian Journal of Chemical Society, Polycyclic Aromatic compounds etc.

8. Ph.D. thesis examined: 05

9. Board of Editors: Bulletin of Materials Research, BECDU, Howrah (one issue)

D. Research Grants Received

1. CSIR, New Delhi: *Title of the Project:* "Fischer's Carbene Complex: Applications to the synthesis of Heterolignanes and Conformationally Restricted Analogues of Biologically Important Nicotine and Anabasine": Sanction No.01(1874)/03/EMR II, dated February 25, 2004; Amount: **8.59 Lakh**. (Duration: 03 years). **Completed**
[PI/CO-PI : **Sole Investigator**]
2. UGC Major: *Title of the Project:* "Synthesis of aromatic nitrogen heterocycles by the coupling of the Fischer carbene complexes with heteroatom containing *o*-alkynyl benzoyl derivatives": Sanction No. F. 12-24/ 2004 dated January 5, 2004; Amount: **4.80 Lakh** (Duration: 03 years). **Completed**
[PI/CO-PI : **Sole Investigator**]
3. CSIR, New Delhi: *Title of the Project:* "Tandem azaisobenzofurans formation – Diels-Alder reactions: Applications to the synthesis of biologically active aromatic heterocycles": Sanction No. 01(2215)/08/EMR-II dated 06.05.2008; Amount: **12.67 Lakh**. (Duration: 04 years). **Completed**
[PI/CO-PI : **Sole Investigator**]
4. UGC Major: *Title of the Project:* "Design, Synthesis and Studies of Optoelectronic Properties of Stilbenoid Dendritic Compounds with Heteroaromatic Core": Sanction No. 37-93/2009 (SR); Amount: **6.67 Lakh** (Duration: 03 years). **Completed**
[PI/CO-PI : **Sole Investigator**]
5. CSIR, New Delhi: *Title of the Project:* "Synthesis of π -conjugated oligomers utilizing multi-fold Pd-catalyzed coupling reactions: Application to the organic electronic devices": Sanction No. 02(0150)/13/EMR-II dated 10.10.2013; Amount: -- **21.32 Lakh**. (Duration: 03 years). **Completed**
[PI/CO-PI : **Sole Investigator**]

E. Student Research (Supervised)**(i) Doctoral Thesis Research**

S. No.	Name	Title of the thesis	Joint Supervisor(s)	Status	Year of the award
1.	Gouranga Prasad Jana	Tandem azaisobenzofuran formation—Diels–Alder reaction: Synthesis of nitrogen containing heterocyclic analogues of 1-arylnaphthalene lignans	Nil	Awarded	April 30, 2010
2.	Soumita Mukherjee	Synthesis of some selected nitrogen-containing six-membered heterocycles using Fischer carbene complexes	Nil	Awarded	August 18, 2011
3.	P. Jaya Prakash Yadav	Thermoreversible Gelation of Poly(vinylidene fluoride) and its Copolymer in Phthalates	Dr. P. Maiti, IT, BHU, Varanasi	Awarded	August 16, 2011
4.	Priyabrata Roy	Ring annulation strategies for synthesis of selected fused aza-heterocycles using Fischer carbene complexes	Nil	Awarded	August 02, 2012
5.	Debabrata Jana	Design, Synthesis and Photophysical Properties of π -Conjugated Oligomers	Nil	Awarded	November 30, 2012
6.	Samadrita Sengupta	Studies on Preparation and Evaluation of the Physico-Chemical and Nutritional Properties of Some Non-Dairy Products	Dr. Jayati Bhowal, SOCSAT, IEST	Awarded	March 27, 2017
7.	Shatabdi Boxi	Novel Emitting Organic Conjugated Molecules: Design, Synthesis and Photophysical Properties	Nil	Awarded	November 30, 2018

8.	Snehasis Dey		Nil	In progress	
9.	Himanshu Mahata		Nil	In progress	

(ii) Master's Thesis Research:

Completed: 33 On going: Nil

F. Invited Lectures

1. **B. K. Ghorai**, "Applications of Fischer carbene complex to the synthesis of fused azaheterocycles of biological importance" at Symposium on *Chemistry of Organometallics and its application to society (COAS)* held at the Department of Chemistry, Salipur College, Salipur, Cuttack, Odisha, India on September 14–15, 2013.
2. **B. K. Ghorai**, "Annulations using Fischer carbene complexes for construction of fused azaheterocycles" at Chemistry Division, BARC, Trombay, Mumbai on May 17, 2013.
3. **B. K. Ghorai**, "Some Novel Organometallic Compounds in Organic Synthesis" at the Refresher Course, Academic Staff College, Calcutta University on November 26, 2010.
4. **B. K. Ghorai**, "Multicomponent approach to the synthesis of nitrogen containing polycyclic heterocycles using Fischer carbene chemistry" at CRSI Symposium-VIII on Advances in Chemical Research on August 06, 2010 at BESU, Shibpur, Howrah.
5. **B. K. Ghorai**, "Synthesis of Some Novel organometallic compounds" at Department of Chemistry, Birla Institute of Technology, Meshra, Ranchi, Jharkhand, India on April 01, 2009.
6. **B. K. Ghorai**, "Synthesis of Biologically Active Heterocyclic Analogues of 1-Arylnaphthalene Lignans and Studies on Chemical Constituents of the Roots of *Alternanthera sessilis*" Symposium on *Medicinal Plants: Resource Development and Utilization* at Department of Chemistry, Bengal Engineering and Science University, Shibpur, Howrah, India on October 31, 2006.
7. **B. K. Ghorai**, "Fischer carbene complexes: Application to the synthesis of steroid ring system and aromatic nitrogen heterocycles" at Department of Organic Chemistry, IACS, Jadavpur, Kolkata, India on August 7, 2003.
8. **B. K. Ghorai**, "Synthesis of Steroids and Aromatic Nitrogen Heterocycles through the Coupling of Carbene Complexes with Highly Conjugated Acetylenes" Department of Chemistry, Bengal Engineering College (A Deemed University), Shibpur, Howrah, India on October 3, 2002.

G. Publications

Journal Papers:

1. T. K. Sarkar and **B. K. Ghorai**, " Silicon-directed Bamford Stevens Reactions of β -Trimethylsilyl N-Aziridinylimines", *J. Chem. Soc., Chem. Commun.*, **1992**, 1184–1185.
2. T. K. Sarkar, S. K. Ghosh, P. S. V. Subba Rao, and **B. K. Ghorai**, "An 'Anomalous' Ozonolysis of an Olefin: Isolation and Crystal Structure of Methyl (4aRS, 8RS, 8aRS)-Decahydro-2, 5-dioxo-quinoline-8-carboxylate", *J. Chem. Research(s)*, **1992**, 394–395 and *J. Chem. Research(M)*, **1992**, 3001–3014.
3. T. K. Sarkar, **B. K. Ghorai**, S. K. Nandy and B. Mukherjee, "Intramolecular Alder Ene Reactions of activated 1,6-Dienes: Stereochemical Control over three Contiguous Stereogenic Centers", *Tetrahedron Lett.*, **1994**, 35, 6903–6906.
4. T. K. Sarkar, **B. K. Ghorai**, and A. Banerji, "Intramolecular Alder Ene Approach to Stereochemical Control over three Contiguous Stereogenic Centers: Synthesis of (\pm)-Methyl Cucubate and (\pm)-Methyl Epijasmonate", *Tetrahedron Lett.*, **1994**, 35, 6907–6908.
5. T. K. Sarkar, S. K. Nandy, **B. K. Ghorai** and B. Mukherjee, "Lithium Perchlorate Dispersed on Silica Gel, a Mild and Efficient Catalyst for Intramolecular Ene Reactions of Activated 1,6- and 1,7- Dienes", *Synlett*, **1996**, 97–99.
6. T. K. Sarkar, **B. K. Ghorai**, S. K. Das, P. Gangopadhyay and P. S. V. Subba Rao, "Siliocon as Controlling Element for Regioselective Ene Reaction of DEAD with (Homo)Allylic Silanes. Application to the Synthesis of Cyclic 1,2-Dinitrogen Compounds", *Tetrahedron Lett.*, **1996**, 37, 6607–6610.
7. T. K. Sarkar, **B. K. Ghorai**, S. K. Nandy, B. Mukherjee and A. Banerji, "Stereochemical Control over three Contiguous Stereogenic Center in the Intramolecular Ene Reaction of activated 1,6-Dienes. Application to the Synthesis of (\pm)- Methyl Cucubate and (\pm)-Methyl Epijasmonate", *J. Org. Chem.*, **1997**, 62, 6006–6011.
8. T. K. Sarkar, P. Gangopadhyay, **B. K. Ghorai**, S. K. Nandy and J-M. Fang, "Cyclopentanoid Allylsilane in Synthesis: A Facile Construction of the 5-8 Carbon Frame work of Asteriscanolide", *Tetrahedron Lett.*, **1998**, 39, 8365–8366.
9. T. K. Sarkar and **B. K. Ghorai**, "Methyl Epijasmonate: Historical Perspective and Total Synthesis", *J. Indian Chem. Soc.*, **1999**, 76, 693–706.

10. **B. K. Ghorai**, J. W. Herndon and Y.-F. Lam, "One-Step Convergent Synthesis of the Steroid Ring System via the Coupling of γ , δ -Unsaturated Fischer Carbene Complexes with *o*-Ethynylbenzaldehyde", *Organic Lett.*, **2001**, 3, 3535–3538.
11. **B. K. Ghorai**, S. Menon, D. L. Johnson and J. W. Herndon, "Inversion of the Direction of Stereoinduction in the Coupling of Chiral *g*, *d*-Unsaturated Fischer Carbene Complexes with *o*-Ethynylbenzaldehyde", *Organic Lett.*, **2002**, 4, 2121–2124.
12. **B. K. Ghorai** and J. W. Herndon, "Coupling of Fischer Carbene Complexes with *o*-Alkynylbenzamides", *Organometallics*, **2003**, 22, 3951–3957.
13. **B. K. Ghorai**, D. Jiang and J. W. Herndon, "Novel Synthesis of Isoquinolines Using Isobenzofuran- Nitriles Diels Alder Reactions", *Organic Lett.*, **2003**, 5, 4261–4263.
14. **B. K. Ghorai**, S. Duan, D. Jiang and J. W. Herndon, "Coupling of β -Cyanocarbene-Chromium Complexes with 2-Alkynylbenzoyl Derivatives: A [5+5]-Cycloaddition Approach to Phenanthridines", *Synthesis*, **2006**, (21), 3661–3669.
15. G. P. Jana and **B. K. Ghorai**, "Tandem furo[3,4-*b*]pyridine formation-Diels Alder reaction: an approach to the synthesis of nitrogen containing heterocyclic analogues of 1-arylnaphthalene lignans", *Tetrahedron*, **2007**, 63, 12015–12025.
16. G. P. Jana and **B. K. Ghorai**, "Tandem Generation and Trapping of Furo[3,4-*c*]isoquinoline Intermediates Leading to the Synthesis of Phenanthridine Ring Systems", *Lett. Org. Chem.*, **2009**, 6, 372–376.
17. S. Mukherjee, G. P. Jana and **B. K. Ghorai**, "Synthesis of isoquinolines through the coupling of Fischer carbene complexes with *o*-alkynylpyridine carbonyl derivatives", *J. Organomet. Chem.*, **2009**, 694, 4100–4106.
18. D. Jana and **B. K. Ghorai**, "Design, Synthesis and Optical Response of Pyridine-Cored V-Shaped Stilbenoid Dendrimers", *Lett. Org. Chem.*, **2010**, 7, 203–207.
19. S. Mukherjee and **B. K. Ghorai**, "Metalation of 2,4-dialkoxy-5-bromopyrimidine and formylation with dimethylformamide: Isolation of unexpectedly formed 2,6-dialkoxy-5-dimethylaminopyrimidine-4-carboxaldehyde", *Synth. Commun.*, **2010**, 40, 1939–1943.
20. P. Roy and **B. K. Ghorai**, "One-pot three-component synthesis of quinoxaline and phenazine ring systems using Fischer carbene complexes", *Beilstein J. Org. Chem.*, **2010**, 6, No. 52. doi:10.3762/bjoc.6.52

21. G. P. Jana, S. Mukherjee and **B. K. Ghorai**, “Multicomponent approach for the synthesis of phenanthridine and acridine ring systems via the coupling of Fischer carbene complexes with heteroaromatic *o*-alkynyl Carbonyl derivatives”, *Synthesis*, **2010**, 3179–3189.
22. P. Roy, D. Jana and **B. K. Ghorai**, “Synthesis and Photophysical Properties of Stilbenoid Dendrimers via Heck Reaction on a Tetraphenylethylene Core”, *Bull. Chem. Soc. Jpn.*, **2010**, 83, 1269–1271.
23. P. J. P. Yadav, A. K. Patra, P. U. Sastry, **B. K. Ghorai** and P. Maiti, “Solvent Retention, Thermodynamics, Rheology and Small Angle X-ray Scattering Studies on Thermoreversible Poly(vinylidene fluoride) Gels” *J. Phys. Chem. B*, **2010**, 114, 11420–11429.
24. P. Roy and **B. K. Ghorai**, “One-pot synthesis of furo[2,3-*h*]quinoline and furo[2,3-*h*]isoquinoline derivatives using Fischer carbene complex”, *Tetrahedron Lett.* **2011**, 52, 251–253.
25. S. Mukherjee, P. Roy and **B. K. Ghorai**, “One-pot three-component synthesis of quinoxaline, quinazoline and phenazine ring systems using Fischer carbene complexes”, *Synthesis*, **2011**, 1419–1426.
26. P. J. P. Yadav, B. Maiti, **B. K. Ghorai**, P. U. Sastry, A. K. Patra, V. K. Aswal and P. Maiti, “Thermoreversible Gelation of Poly(vinylidene fluoride-*co*-chlorotrifluoroethylene): Structure, Morphology, Thermodynamics, and Theoretical Prediction”, *Macromolecules*, **2011**, 44, 3029–3038.
27. P. Roy and **B. K. Ghorai**, “Annulation of furan-bridged 10-membered rings on *N*-heterocycles through [8+2] cycloaddition of dienylazaisobenzofurans and dimethyl acetylenedicarboxylate”, *Tetrahedron Lett.* **2011**, 52, 5668–5671.
28. D. Jana and **B. K. Ghorai**, “Synthesis and photophysical properties of tetraphenylethylene-based conjugated dendrimers with triphenylamine core”, *Tetrahedron Lett.* **2012**, 53, 196–199.
29. P. Roy and **B. K. Ghorai**, “One-pot synthesis of pyrano[4,3-*b*]quinolinones from 2-alkynyl-3-formylquinolines via oxidative 6-*endo-dig* ring closure”, *Tetrahedron Lett.* **2012**, 53, 235–238.
30. D. Jana and **B. K. Ghorai**, “Synthesis and fluorescence behaviour of star-shaped pyridine and benzene cored stilbenoid compounds” *J. Indian Chem. Soc.* **2012**, 89, 405–410.

31. D. Jana and **B. K. Ghorai**, "Triphenylpyridine-based star-shaped π -conjugated oligomers with triphenylamine core: Synthesis and photophysical properties", *Tetrahedron Lett.* **2012**, 53, 1798–1801.
32. D. Jana and **B. K. Ghorai**, "Pyridine-cored V-shaped π -conjugated oligomers: synthesis and optical properties", *Tetrahedron* **2012**, 68, 7309–7316.
33. D. Jana and **B. K. Ghorai**, "Synthesis and aggregation-induced emission properties of tetraphenylethylene-based oligomers containing triphenylethylene moiety", *Tetrahedron Lett.* **2012**, 53, 6838–6842.
34. P. Roy, P. Mitra and **B. K. Ghorai**, "Synthesis of azahomosteroid ring system through intramolecular [4+2] cycloaddition of *in situ* generated azaisobenzofuran intermediates", *Tetrahedron Lett.* **2013**, 54, 1440–1443.
35. D. Jana, S. Boxi and **B. K. Ghorai**, "Synthesis of *gem*-tetraphenylethylene oligomers utilizing Suzuki reaction and their aggregation properties", *Dyes and Pigments* **2013**, 99, 740–747.
36. D. Jana and **B. K. Ghorai**, "Hexaphenylbenzene end-capped tri(p-phenylenevinylene): Synthesis and properties", *Tetrahedron Lett.* **2014**, 55, 5203–5206.
37. D. Jana and **B. K. Ghorai**, "Side substituent dependence of photophysical properties of 9-arylanthracene based π -conjugates", *Bull. Chem. Soc. Jpn.*, **2015**, 88, 89–96.
38. D. Jana, S. Boxi, P. P. Parui and **B. K. Ghorai**, "Planar-Rotor architecture based pyrene-vinyl-tetraphenylethylene conjugated systems: photophysical properties and aggregation behavior", *Org. Biomol. Chem.*, **2015**, 13, 10663–10674.
39. N. Pradhan, D. Jana, **B. K. Ghorai** and N. Jana, "Detection and Monitoring of Amyloid Fibrillation Using Fluorescence 'Switch-On' Probe" *ACS Appl. Mater. Interfaces*, **2015**, 7, 25813–25820.
40. K. Mandal, D. Jana, **B. K. Ghorai**, and Nikhil R. Jana, "Fluorescent Imaging Probe from Nanoparticle Made of AIE Molecule" *J. Phys. Chem. C*, **2016**, 120, 5196–5206.
41. K. Mandal, D. Jana, **B. K. Ghorai**, and Nikhil R. Jana, "Functionalized chitosan with self-assembly induced and subcellular localization-dependent fluorescence 'switch on' property" *New J. Chem.*, **2018**, 42, 5774–5784.

42. S. Biswas, D. Jana, G. Kumar, S. Maji, P. Kundu, U. Ghorai, R. Giri, B. Das, N. Chattopadhyay, B. K. Ghorai, S. Acharya, "Supramolecular Aggregates of Tetraphenylethene Cored AIEgen towards Mechanoluminescent and Electroluminescent Devices" *ACS Appl. Mater. Interfaces*, **2018**, *10*, 17409–17418.
43. S. Boxi, D. Jana, P. P. Parui and **B. K. Ghorai**, "Dibenzo[*a,c*]phenazine based donor-acceptor (D-A) tetra branched molecules: Fine tuning of optical properties", *Chemistry Select.*, **2018**, *3*, 6953-6959.
44. S. Boxi, D. Jana and **B. K. Ghorai**, "Synthesis and Optical Properties of Bipolar Quinoxaline-Triphenylamine Based Stilbene", *Optical Materials*, **2019**, <https://doi.org/10.1016/j.omx.2019.100013>.
45. Kuheli Mandal, Debabrata Jana, Binay K. Ghorai, Nikhil Jana, "AIEgen-Conjugated Magnetic Nanoparticles as Magnetic-Fluorescent Bioimaging Probes" *ACS Appl. Nano Mater.*, **2019**, *2*, 3292-3299.

Scopus citation as on 29.07.2019 is 510. [H index 15, i₁₀ index=24]

H. Papers Presented (symposium)

International

1. S. Boxi, D. Jana and B. K. Ghorai, "Design and synthesis of dibenzo[*a,c*]phenazine based blue, green and red emitting tetramers", **International Conference on Chemistry for Human Development (ICCHD-2018)** at Heritage Institute of Kolkata, Kolkata, India, January 8–10, **2018**, Poster No. P-165.
2. D. Jana and B. K. Ghorai, "Synthesis and aggregation-induced emission properties of tetraphenylethylene-based oligomers containing triphenylethylene moiety", **International symposium on Molecular organization and complexity: a chemical perspective** at Calcutta University, Kolkata, India, February 6-8, **2013**, Poster No. P-34, p 66.
3. P. Roy and B. K. Ghorai, "Annulation of furan-bridged 10-membered rings on *N*-heterocycles through [8+2]-cycloaddition of dienyldiazisobenzofurans and dimethyl acetylenedicarboxylate", **International symposium on Recent Trends of Research in Chemistry** at Midnapore College, Paschim Medinipur, West Bengal, India, October 31-November 1, **2011**, Poster No. 21, page 37.

4. S. Mukherjee and B. K. Ghorai, "Synthesis of benzoquinolines using fischer carbene complexes", **International symposium on Chemistry** at Calcutta University, Kolkata, India, January 13-15, **2011**, Poster No. P-64, p 92.
5. **B. K. Ghorai** and P. Roy, "Synthesis of phenazine derivatives through the coupling of Fischer carbene complexes with *o*-alkynylpyrazine carbonyl derivatives", **46th Annual Convention of Chemists and International Conference on Recent Trends in Chemical Sciences** at VIT University, Vellore, TN, India, December 02-06, **2009**, Abstract No. ORG(PP)-14.
6. S. Mukherjee and B. K. Ghorai, "Three-component one-pot synthesis of isoquinolines and acridines", **46th Annual Convention of Chemists and International Conference on Recent Trends in Chemical Sciences** at VIT University, Vellore, TN, India, December 02-06, **2009**, Abstract No. ORG(AP)-1.
7. B. K. Ghorai and G. P. Jana, "Generation and trapping of furo[3,4-*b*]pyridines formed by the coupling of Fischer carbene complexes with *o*-alkynylpyridinoyl derivatives: an application to the synthesis of heterolignans", **International Symposium on Current Perspective in Organic Chemistry** at IACS, Jadavpur, Kolkata, India, December 7-9, **2006**, Abstract No. ISCPOC P-23.
8. B. K. Ghorai, D. Jiang and J. W. Herndon, "Synthesis of Isoquinolines and Benzophenanthridines through the Coupling of β -Cyanocarbene Complexes with *o*-alkynylbenzaldehydes", **223rd American Chemical Society meeting at Orlando, Florida (USA)**, April 7-11, **2002**, Abstract No. ORGN-128.
9. **B. K. Ghorai** and J. W. Herndon, "One-Step Convergent Synthesis of the Steroid Ring System via the Coupling of γ , δ -Unsaturated Fischer Carbene Complexes with *o*-Ethynylbenzaldehyde", **222nd American Chemical Society Meeting at Chicago, Illinois, USA**, August 26-31, **2001**, Abstract No. ORGN-433.
10. T. K. Sarkar, **B. K. Ghorai**, S. K. Nandy and B. Mukherjee, "Intramolecular Alder Ene Approach to Stereochemical Control over three Contiguous Stereogenic Centers: Total Synthesis of Epijasmonoid Natural Products", **10th International Conference on Organic Synthesis** at Indian Institute of Science, Bangalore, India, December, **1994**, Abstract No. ISP-42.

National

1. D. Jana, S. Boxi and B. K. Ghorai, "Investigation of photophysical properties and aggregation behavior of planer-rotor architecture based pyrene-vinyl-tetraphenylene conjugated systems", **National Symposium on recent Advances in Chemistry and Industry, 2017** at IEST, Shibpur, Howrah, West Bengal, August 02-03, 2017, Poster No. 29, page No. 145.

2. D. Jana, S. Boxi and B. K. Ghorai, "Synthesis of *gem*-tetraphenylethylene oligomers utilizing Suzuki reaction and their aggregation properties", *19th CRSI National Symposium in Chemistry* at University of North Bengal, Darjeeling, West Bengal, July 14-16, **2016**, Poster No. PP41.
3. S. Boxi, D. Jana and B. K. Ghorai, "Synthesis of *gem*-tetraphenylethylene based oligomers and their aggregation induced emission properties", Research Scholars Colloquium 2016 at IEST, Shibpur, Howrah, August 23-24, **2016**, pp 283-284. (*proceedings paper*)
4. D. Jana and B. K. Ghorai, "Synthesis and photophysical properties of D- π -A optoelectronic materials based on triphenylpyridine and triphenylamine", *20th West Bengal State Science and Technology Congress* at BESU, Shibpur, Howrah, February 28 - March 02, **2013**, Abstract No. Chem-PP-15, p.48.
5. S. Boxi, D. Jana and B. K. Ghorai, "Triphenylpyridine-based star-shaped π -conjugated oligomers with triphenylamine core: Synthesis and photophysical properties", *20th West Bengal State Science and Technology Congress* at BESU, Shibpur, Howrah, February 28 - March 02, **2013**, Abstract No. Chem-OP-12, p.18.
6. S. Mukherjee and B. K. Ghorai, "Application of Fischer carbene complexes in the synthesis of nitrogen-containing polyheterocycles", at BESU, Shibpur, Howrah, March 24-25, **2011**, p. 19.
7. D. Jana and B. K. Ghorai, "Synthesis and photophysical properties of stilbenoid compounds", *Recent advances in selected topics of Chemistry-II and International year of Chemistry-2011* at BESU, Shibpur, Howrah, March 24-25, **2011**, p. 24.
8. P. Roy and B. K. Ghorai, "One-pot synthesis of furo[2,3-*h*]quinoline and furo[2,3-*h*]isoquinoline derivatives using Fischer carbene complex" *18th West Bengal State Science and Technology Congress* at NRKM, Kolkata, February 28 - March 01, **2011**, Abstract No. IPC (5), p.47.
9. D. Jana and B. K. Ghorai, "Synthesis and fluorescence behaviour of star-shaped pyridine/benzene cored stilbenoid compounds", *18th West Bengal State Science and Technology Congress* at NRKM, Kolkata, February 28 - March 01, **2011**, Abstract No. IPC (12), p.61.
10. P. Roy and B. K. Ghorai, "One-pot synthesis of furo[2,3-*h*]quinoline and furo[2,3-*h*]isoquinoline derivatives using Fischer carbene complex" *13th CRSI National Symposium in Chemistry* at NISER, Bhubaneswar, Orissa, India, February 04-07, **2011**.
11. D. Jana and B. K. Ghorai, "Synthesis and fluorescence behaviour of star-shaped pyridine/benzene cored stilbenoid compounds", *National Symposium on Organic Chemistry-*

IV: Modern Trends and Perspective, Jadavpur University, February 02-03, **2011**, Abstract No. P-2F, p. 47.

12. S. Mukherjee and B. K. Ghorai, "Synthesis of nitrogen containing polycyclic heterocycles using Fischer carbene complexes", *6th J-NOST Conference* at University of Hyderabad, India, January 28-31, **2011**, p 108.
13. B. K. Ghorai, "Multicomponent approach to the synthesis of nitrogen containing polycyclic heterocycles using Fischer carbene chemistry" at CRSI Symposium-VIII on Advances in Chemical Research on August 06, 2010 at BESU, Shibpur, Howrah.
14. D. Jana, P. Roy and B. K. Ghorai, "Stilbenoid dendrimers with a tetraphenylethylene core: synthesis and optical properties" at *CRSI Symposium-VIII on Advances in Chemical Research* on August 06, **2010** at BESU, Shibpur, Howrah, Abstract No. P15.
15. P. Roy and B. K. Ghorai, "One-pot three-component synthesis of quinoxaline and phenazine ring systems using Fischer carbene complexes" at *Acharya Prafulla Chandra Ray Memorial Symposium on Chemistry Today (2010)* at Calcutta University, Kolkata, India, August 02-04, **2010**, p. 69.
16. D. Jana and B. K. Ghorai, "V-Shaped 2,6-bis(arylvinyl)pyridine stilbenoid compounds: synthesis and optical properties", *23rd Annual Conference of Orissa Chemical Society & National Seminar on Recent Trends in Chemical Science & Technology* at NIT Rourkela, Orissa, India, December 19-20, **2009**, pp 01-04. (*proceedings paper*)
17. S. Mukherjee and B. K. Ghorai, "Generation and trapping of furo[3,4-*c*]pyridine intermediates formed in the coupling of Fischer carbene complexes with *o*-alkynylpyridine carbonyl derivatives", *23rd Annual Conference of Orissa Chemical Society & National Seminar on Recent Trends in Chemical Science & Technology* at NIT Rourkela, Orissa, India, December 19-20, **2009**, Abstract No. *RTCST-IO*.
18. **B. K. Ghorai** and G. P. Jana, "Tandem generation and trapping of furo[3,4-*c*]isoquinoline intermediates leading to the synthesis of phenanthridine ring systems" *National conference on life & work of Sir J C Bose* at Jadavpur University, Kolkata, India, March 20-21, **2009**, Abstract No. PP-05.
19. G. P. Jana, S. Mukherjee, D. Jana, P. Roy and B. K. Ghorai, 'One pot generation and trapping of furo[3,4-*b*]pyridine intermediate with dienophiles: Applications to the synthesis of heterolignans' *15th West Bengal State Science and Technology Congress* at B. E. S. U., Shibpur, Howrah, February 28-29, **2008**, Abstract No. A-12.
20. G. P. Jana and B. K. Ghorai, "Tandem furo[3,4-*b*]pyridine formation-Diels Alder reaction: an approach to the synthesis of nitrogen containing heterocyclic analogues of 1-

arylnaphthalene lignans” 3rd J-NOST Symposium at Guru Nanak Dev University, Amritsar, India, November 15-18, 2007, Abstract No. 13.

21. T. K. Sarkar, **B. K. Ghorai**, P. Gangopadhyay and S. K. Nandy, “Cyclopentanoid Allylsilane in Synthesis Application to the Synthesis of Epijasmonoid Natural Products and Facile Construction of the 5-8 Fused Carbon Framework of Asteriscanolide” 6th West Bengal State Science and Technology Congress at B. E. College(D.U.), Howrah, India, February 27-March 1, 1999, Abstract No. CHEM 13.
22. T. K. Sarkar, **B. K. Ghorai**, S. K. Das, P. Gangopadhyay and P. S. V. Subba Rao, "Siliocon as a Controlling Element for Regioselective Ene Reaction of DEAD with (Homo)Allylic Silanes. Application to the Synthesis of Cyclic 1,2-Dinitrogen Compounds", 33rd Annual Convention of Chemists at Coimbatore, India, December 26-29, 1996, Abstract No. OS(AP)-06.
23. T. K. Sarkar, **B. K. Ghorai**, S.K.Nandy and B. Mukherjee, "Intramolecular Alder Ene Reactions of activated 1,6-Dienes: Stereochemical Control over three Contiguous Stereogenic Centers", 15th National Symposium on Organic Chemistry, at Science College, Calcutta, March 1994, India, p.15.

I. Collaboration with other Institute

1. Indian Institute of Technology (BHU), Varanasi :

Prof. Pralay Maiti, School of Materials Science and Technology

2. Indian Association for the Cultivation of Science, Kolkata:

(a) Dr. Nikhil R. Jana, Centre for Advanced Materials

(b) Dr. Somabrata Acharya, Centre for Advanced Materials

3. Jadavpur University, Kolkata:

Dr. Partha P. Parui, Department of Chemistry

I. Courses Taught

Ph. D. (Course work):

Course #	Title	Cr. Hrs(per week)	Students
PhDC 01		01	
PhDC 02		01	

M.Sc. (Chemistry):

Year	Semester	Course #	Title	Cr. Hrs(per week)	Students
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1 st	PGC-103	Organic Chemistry-I	01	21-25
1 st	PGC-105	Chemistry Lab	04	21-25
2 nd	PGC-203	Organic Chemistry-II	02	21-25
2 nd	PGC-205	Chemistry Lab	04	21-25
3 rd	PGC-303	Organic Chemistry-III	01	21-25
3 rd	PGC-304	Appl. Of Spectroscopy	02	21-25
3 rd	PGC-305	Chemistry Lab	04	21-25
4 th	PGC-403	Adv. Org. Chemistry	03	8-10
4 th	PGC-404	M.Sc. Project work	08	2- 3

B.E.

1 st	CH1201	Chemistry	01	60-70
1 st	CH1251	Chemistry Lab	03	25-30
2 nd	CH1201	Chemistry	01	60-70
2 nd	CH1251	Chemistry Lab	03	25-30
4 th	CH 451	Energy Materials Lab	03	30-35

J. Service

(a) Committee Work:

(i) Departmental Committees

Year Committees

03/2010- 3/2012	Head Examiner, Chemistry for BE students
03/2011	Convener, Technical Committee, National Seminar (UGC)
6/2010	Joint Secretary, CRSI Symposium (VIII) on “Advances in Chemical Research”
01/2010	Treasurer, Departmental UGC-SAP seminar held on January 15/2010
2008	Preparation of UGC of X th plan assessment and XI th plan requirement materials
06/2006–12/2008	Secretary, Departmental Academic Committee
2006–07	Member, Execution of UGC-special grants (~4 crore)
04/1996–08/2000	Departmental Store-in-Charge
06/1995–06/2000 & 01/2003–06/2005	Department Class Routines Preparation-In-Charge
06/2004–09/2010	Member, Departmental Purchase Committee
2003	Preparation and presentation of UGC of IX th plan assessment and X th plan requirement materials before UGC expert committee

1997	Member, Preparation of syllabus for introduction of M.Sc. in Applied Chemistry at BECDU, present name BESUS
1997	Treasurer, Centenary Celebration of the Department

I was actively involved in :

- (a) (i) MODROBS, (ii) DST-FIST-I_2003, (iii) DST-FIST-II_2013, (iv) UGC-SAP-I and (v) SAIF_2013 project proposals submission and implementations.
- (b) Opening of M.Sc. in Chemistry course (2001) in this Institute. After introduction of M.Sc. course in chemistry, I have taken huge classes (both theoretical and laboratory classes) as number of Teacher the then in Organic specialization was two including myself in addition to B.E. (1st, 3rd, 5th Semester) class loads.
- (c) Taken extra classes for NET-GATE coaching (for M.Sc. students).
- (d) Counseling of M.Sc. students for admission to M.Sc. in Chemistry courses.

(ii) Seminars & Symposiums organized on behalf of the Department:

- Seminar on “The Recent Trends in Materials Science” organized by Interdisciplinary Material Research Group (IDMRG), B. E. College (D.U) held on March 8, **1996**.
- Seminar on “Chemistry in the perspective of 21st Century” as a part of Centenary Celebration of Chemistry, B. E. College (D.U) held on December 23, **1997**.
- All India Student Academic Meet, organized by FOSET, B. E. College sub-centre at B. E. College (D.U) held during October 30-31, **1998**.
- Seminar on “Materials Science” organized by Interdisciplinary Material Research Group (IDMRG), B. E. College (D.U) held on August 28, **1998**.
- Seminar on “Advanced Materials for next Millennium” organized by IDMRG, B. E. College (D.U) held on July 16, **1999**.
- A one day seminar on “Modern Trends in Chemistry” with publication of proceedings on 23rd April, **2004**.
- Celebration of “Year of Scientific Awareness – **2004**”.
- A half-day seminar on “The role of chemistry in the context of industry – institute partnership” to commemorate the birthday of Acharya Prafulla Chandra Roy on 2nd August, **2005**.
- A Research Scholars’ Colloquium “CHEMISTRY–COLLOQUIUM–2006” Series–I, held on 30th May, **2006**.
- A Lecture Series on “Emerging Area of Science & Technology” during April **2006** to August **2006**.
- A half-day seminar on “The role of chemistry in the context of Industry – Institute partnership” to commemorate the birthday of Acharya Prafulla Chandra Roy on 2nd August, **2006**.
- One day seminar on “ Medicinal Plants: Resource development and utilization” held on October 31, **2006**
- A half-day seminar on “The role of chemistry in the context of Industry – Institute partnership” to commemorate the birthday of Acharya Prafulla Chandra Roy on 2nd August, **2007**.

- National Seminar on “Recent Advances in Selected Topics of Chemistry-I” held on 15th January, **2010**.
- CRSI Symposium (VIII) on “Advances in Chemical Research” held on August 06, **2010**
- National Seminar on “Recent Advances in Selected Topics of Chemistry-II” held on 24-25 March, **2011**.
- 20th West Bengal State Science and Technology Congress held during February 28- March 02, **2013** at BESU, Shibpur Howrah in collaboration with West Bengal State Council of Science and Technology.
- One day National Seminar on “Recent Trends in Chemical Sciences [A Symposium in Commemoration of the 154th Birth Anniversary of Acharya Prafulla Chandra Ray]” on 5th August, **2015**.
- ***Organizing Secretary***, National Symposium on Recent Advances in Chemistry and Industry (2017) held during August 02-03, **2017** at IEST, Shibpur in collaboration with The Indian Chemical Society, Kolkata

(iii) University Committees

<u>Year</u>	<u>Committees</u>
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2019	Coordinator for CCMN-2019 (M.Sc. admission 2019-20) (Vide office Order No. RDO/727/19 Dated 11.01.2019)
2018	Member, Short-listing Committee for Faculty positions of Centre of Excellence for Green Energy and Sensor Systems (September 2018)
2018	Chairman of Special Reservation Cell and Liaison Officer for SCs/STs and PWD (Vide office order No. Order No. RDO/88/18 Dated 25.07.2018)
2018	Member, Senate Committee for preparation of Ordinance for the PG Program (Vide office order No. RDO/25/18 dated 15/06/2018)
2017	Chairman, Senate Committee (Vide office order No. RMS/6369/17 dated 11/12/2017) for Coating Science
2017	Chairman, Purchase of chemicals for various Department of the Institute (Vide office Order No. 2559/D(AA)/17 dt. 28.06.2017)
Dec 2015–Dec17	Head of the Department
April 2017–	Coordinator, Coating Science and Technology Course, IEST, Shibpur
July 2016 – June 2018	Member, Institute Anti-ragging Committee
2016	Member, Short-listing Committee (First Phase) for Faculty position (18-29 April, 2017)
2016	Member, Screening Committee for the post of Technical Assistant, SAIF programme (5 th June, 2016)
Dec 2015–Dec17	Coordinator DST-FIST project
2014–till date	<i>Member</i> of the Senate, IEST, Shibpur

2015-16	<i>Joint Convener, M.Sc. Admission Committee</i>
2014	<i>Member of the Faculty Council of BESUS</i>
2012–13	<i>Member, 20th West Bengal State Science and Technology Congress held during February 28- March 02, 2013 at BESU, Shibpur Howrah in collaboration with West Bengal State Council of Science and Technology.</i>
2012–13	<i>Member, ‘Eliminate Sexual Harassment Cell’</i>
2010–contd	<i>Member, SC/ST cell of the University.</i>
2009-10	Actively helped Dean, Faculty of Basic and Applied Science to organized first course work as per UGC guidelines on Research Methodology held on January 12-13, 2010 for Ph.D. registered/ enrollment candidates of this University.
2008-09	<i>Joint Convener, M.Sc. Admission Committee</i>
11/2008	To facilitate the process of obtaining declaration from the students from both hosteller and day scholars vide PICSA, notice dated 15.11.2008.
2008–09	<i>Chairman, SC/ST registers maintain Committee</i>
2007–08	<i>Member of the Academic Council of BESUS</i>
2007–08	<i>Chairman, SC/ST registers maintain Committee (Vide Registrar Office order No. RDO-2/1360 dt. 27.08.2007)</i>
2004–05	<i>Member of the M.Sc. Admission Committee</i>
2005–08	<i>Member, INFLIBNET Implementation Committee</i>
2002–03	<i>Member of Academic Council of BESUS</i>
1998–99	<i>Joint Organizing Secretary</i> , 6 th West Bengal State Science and Technology Congress held during February 26-28, 1999 at B. E. College (D.U.), Howrah in collaboration with West Bengal State Council of Science and Technology.
1996	To conduct a ‘trade test’ for the selection of ‘store helper’, Chemistry Department, B E College (D.U.), 1996
1996	To conducted a written test for the selection of ‘Laboratory Assistant’, Chemistry Department, B E College (D.U.), 1996

I was also actively involved for proposal preparation for conversion of University to INI in 2004 and Departmental presentation materials preparation before Anandkrishnan Committee in 2005.

(b) Service to the Profession

2018	Moderator, M.Sc. at N.R.K.M. Residential College, Narendrapur, Kolkata (17.11.2018)
2018	4 th Sem project viva-voce Examiner, N.R.K.M. Residential College

2017	1 st Sem M.Sc. Practical and project viva-voce Examiner, N.R.K.M. Residential College
2017	3 rd sem M.Sc. Practical and project viva-voce Examiner, N.R.K.M. Residential College
2012–present	Member, Board of Studies, N.R.K.M. Residential College, Narendrapur, Kolkata
2013	M.Sc. Practical Examiner, Midnapore College, Vidyasagar University, Midnapore
2012	M.Sc. Practical Examiner, Kalyani University, Nadia
2012	M.Sc. Practical Examiner, Midnapore College, Vidyasagar University, Midnapore
2012	M.Sc. project viva voce Examiner, IIT, Kharagpur
2011	Paper setter (Organic Chemistry), Presidency College
2011	Paper setter (Organic Chemistry), Utkal University, Orissa
2010	Moderator, M.Sc. at N.R.K.M. Residential College, Narendrapur, Kolkata
2009	Member, Selection Committee for selection of the Laboratory Assistant at Pailan College of Engineering and Management, Kolkata
2009	Moderator, M.Sc. at N.R.K.Mission Residential College, Narendrapur, Kolkata
2009	Paper setter (Organic Chemistry), Presidency College
2008	Moderator, M.Sc. at N.R.K.Mission Residential College, Narendrapur, Kolkata
2007	Moderator, M.Sc. at N.R.K.Mission Residential College, Narendrapur, Kolkata
2003-2005	Board of Head Examiners in Chemistry, West Bengal Joint Entrance Examinations
1997-1999	Co-Head Examiner in Chemistry, West Bengal Joint Entrance Examinations