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NAME: DEVENDRA DEO PATHAK

Date of Birth: 01 January, 1961

Designation: Professor

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Department of Applied Chemistry
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Academic Profile:

- **Doctorate Degrees (Ph.D.):**

[Ph.D. in Chemistry](#)

Institution: Research School of Chemistry, Australian National University, Canberra, Australia (1990)

Thesis Title: “Cyclization Reactions of Coordinated Primary Phosphines”

[Ph.D. in Chemistry](#)

Institution: Delhi University, India (1985)

Thesis Title: “1-Diphenylphosphino-2-bis (m-fluorophenyl) phosphinoethane”

Post-doctoral Experience: Five years (1991-1996)

Department of Chemistry, University of Sheffield, Sheffield, (England)

- **Postgraduate Degree (M. Sc.) Chemistry: 1981**

Institution: Agra University, Agra, India (1st Division)

- **Bachelor Degree (B. Sc.): 1979**

Institution: Agra University, Agra, India (1st Division)

Areas of Research Interest:

- Synthetic inorganic/Organometallic chemistry
- Chiral Transition Metal Complexes and Asymmetric Catalysis
- Nanomaterials and Nanotechnology
- Composites of Graphene and Graphene Oxide

- Metal Catalysed Organic Synthesis
- Green Chemistry

Research Experience: About 33 years.

No. of Ph. D. guided: Guided 10, 12 students currently enrolled for Ph.D. degree

M. Phil. guided (Applied Chemistry): 12 students

Details of Ongoing Research Projects:

02 Number of Research Projects are currently going on as follows:

- (I) “High Ash Coal Gasification and Associated Upstream and Downstream Processes (Coal to Chemicals, CTC), (IIT(ISM Project No. CIL(8)/2017-18/539/CHEMICAL ENGG., Value **79 lacks**)
- (II) “Reduced Graphene Oxide (rGO) based dendrimers as novel heterogeneous catalysts for CO₂ fixation and organic synthesis, CSIR Project No 01(2930)/18/EMR-II, Value **06 Lacks**).

Teaching Experience:

26 years of Teaching Experience to Undergraduate (B. Tech.) and Postgraduate (M.Sc./M.Phil.) Students at the Indian Institute of Technology (ISM), Dhanbad and other institutions.

Industrial Experience:

Worked (May 96 to Aug.97) in the **Pharmaceutical Industry** as Head, Chemical Analysis Laboratory, [Ranbaxy Research Laboratories, R&D Centre](#), Gurgaon, Haryana

Organization of Short-term Courses: Organized 02 Courses at IIT (ISM), Dhanbad

Organization of Conferences: 02 National Conferences at IIT(ISM), Dhanbad

International Collaborations:

- Dr. Rakesh Ganguly (Nanyang Technological University (NTU), Singapore 639798): Single crystal X-Ray studies.
- Dr. Nercmi DEGE (University of Ondokuzmayıs Science Faculty Department of Physics Samsun TURKEY): Single crystal X-Ray studies.

National Collaborations:

- Dr Om. P. Khatri (CSIR-Indian Institute of Petroleum, Dehradun, India: Graphene and Graphene Oxide composites in Catalysis

- Prof. M. Lakshmi Kantam, Ex-Director, Indian Institute of Chemical Technology (IICT), Hyderabad, India: Homo- and Heterogeneous Catalysis
- Dr. Manish Kumar Jha, CSIR-National Metallurgical Laboratory (NML), Jamshedpur, India: Recovery of Precious Metals From Small Electronic Devices
- Dr. P. K. Roychowdhury, Associate Director, TCG Lifesciences/Chembiotek, Kolkata, India: Synthetic and Analytical Chemistry
- Prof. P. K. Khanna, Head, Department of Chemistry, Defence Institute of Advanced Technology (DIAT), Pune, India: Material Science and Catalysis

Countries Visited: USA, Australia, England, France and Singapore.

Membership of Professional bodies:

- (i) Life Member, Indian Science Congress.
- (ii) Life Member, Indian Association for Cultivation of Science, Kolkata.
- (iii) Life Member, Indian Council of Chemists.
- (iv) Life member, International Congress of Chemistry & Environment
- (v) Member, American Chemical Society.
- (vi) Member, Organizing Committee of “2nd International Conference and Exhibition on Materials & Engineering (ICEME San Diego-2018)”, USA.

Administrative Experience

- **Head**, Department of Applied Chemistry (2001-2003)
- **Hostel Warden**, IIT(ISM), Dhanbad 2004-2011
- **Chief Hostel Warden**, IIT(ISM) (2011-2014)
- **Head**, Department of Applied Chemistry (2014-2017)
- **Head**, Department of Applied Chemistry (Continuing from May 2017 till present)
- **Convenor**, IIT(ISM), Indian Council of Chemist National Conference (2014)
- **Sectional President** (Inorganic Section), Indian Council of Chemists, Surat, 2015
- **Member**, Executive Committee, Indian Council of Chemists, 2014-2016
- **Member**, Central Purchase Committee, IIT(ISM), Dhanbad, 2007-2010
- **Chairman**, GJLT and Penmann Hall, IIT(ISM), Dhanbad, 2011-2013
- **Chairman**, Health Centre Purchase Committee, IIT(ISM), Dhanbad, (2015 till present)
- **Dean's Nominee**, AcSIR, CIMFR, Dhanbad, 2014-till present.
- **DST Nominee** of Sophisticated analytical instrument facility (SAIF) CSIR-CDRI Lucknow.
- **Vice Chancellor's nominee** for “Board of Courses & Study” in Chemistry, Vinoba Bhave University, Hazaribag, Jharkhand.
- **Vice Chancellor's nominee** of Mahatma Gandhi Central University, Motihari, Bihar, Jharkhand.
- **President** of the Inorganic Chemistry Section, XXIV ICC Conference, (Uka Tarsadia University, Bardoli, Surat, India 26-28, December 2015)
- **Chairman** of Faculty Development Programme of Ministry of Human Resource

Development in Refresher Course in Chemistry (Indian Institute of Technology (ISM), Dhanbad, June 2017)

Scholarships/Fellowships Received:

- National Scholarship (1975-1978).
- Meritorious Scholarship (1978-79).
- National Loan Scholarship (1979-81)
- Centre of Advanced Studies Fellowship, UGC, New Delhi (1981-85)
- Australian National University, Canberra (Australia) Ph.D. Fellowship (1986-90)
- Science and Engineering Research Council (SERC) and DTI Link Post-doctoral
- Research Fellowship, England (1991 to 2005)
- Scientist Pool Officer (Senior Research Associate), CSIR, New Delhi, August 1997 to Sept.1998.
- Award of the Indian National Science Academy (INSA) Visiting Fellowship at the Indian Institute of Chemical Technology, Hyderabad, Dec. 2005 to March 2006.

Reviewer for National/International Journals:

- Reviewer of several national/international journals of Royal Society of Chemistry, Elsevier, Springer and Wiley etc.

Total No: of Research Papers Published:

57 in International Journals (List enclosed)

List of Publications (International Journals)

1. "Graphene oxide immobilized Copper(II) Schiff base complex [GO@AF-SB-Cu]: A versatile catalyst for Chan-Lam coupling reaction", A. Kumar, S. Layek, B. Agrahari, S. Kujur, D. D. Pathak, *ChemistrySelect* 2019, **4**, 1337, DOI: 10.1002/slct.201803113
2. "Synthesis and characterization of guanine-functionalized mesoporous silica [SBA-16-G]: a metal-free and recyclable heterogeneous solid base catalyst for synthesis of pyran-annulated heterocyclic compounds", R. Gupta, S. Layek, D. D. Pathak, *Research on Chemical Intermediates*, DOI: 10.1007/s11164-018-3693-5, DOI: 10.1007/s11164-018-3693-5
3. B. Agrahari, S. Layek, R. Ganguly, D. D. Pathak "Synthesis and crystal structures of salen-type Cu(II) and Ni(II) Schiff base complexes: Application in [3+2]-Cycloaddition and A³-coupling reactions", *New J. Chem.*, 2018, **42**, 13754-13762, DOI:10.1039/C8NJ01718B
4. "[Zn(L-proline)₂] catalyzed one-pot green synthesis of propargylamines under solvent-free condition" S. Layek, B. Agrahari, S. Kumari, Anuradha, and D. D. Pathak, *Catalysis Letters*, 2018, **148**, 2675, DOI: 10.1007/s10562-018-2449-6
5. "Unprecedented formation of a μ -oxobridged polymeric copper(II) complex: Evaluation of

- catalytic activity in synthesis of 5-substituted 1*H*-tetrazoles”, S. Layek, R. Ganguly, D. D. Pathak, *J. Organometal. Chem.*, 2018, **870**, 16, DOI: **10.1016/j.jorganchem.2018.06.004**
6. “Synthesis, crystal structures, and application of two new pincer type palladium(II)-Schiff base complexes in C-C cross-coupling reactions”, B. Agrahari, S. Layek, Anuradha, R. Ganguly, **D. D. Pathak**, *Inorganic. Chimic. Acta*, 2018, **471**, 345. DOI: **10.1016/j.ica.2017.11.018**
 7. “Studies on Combustion of Hard Coke Using Different Additives”, S. K. Mondal, D.D. Pathak, Jagdish, *Int. J. App. Eng. Res.*, 2018, 13, 16919
 8. “Processes developed for the separation of europium (Eu) from various resources”, A. Kumari, M. K. Jha, **D. D. Pathak**, S. Chakravarty, J. C. Lee, *Separation and Purification Reviews*, 2018, DOI: **10.1080/15422119.2018.1454959**
 9. “Review on the Processes for the Recovery of Rare Earth Metals (REMs) from Secondary Resources” A. Kumari, M. K. Jha, D. D. Pathak, *Rare Metal Technology*, 2018, DOI: **10.1007/978-3-319-72350-1-5**
 10. “Processing of monazite leach liquor for the recovery of light rare earth metals (LREMs)” Kumari, A., Jha, S., Patel, J.N., Chakravarty, S., Jha, M.K., Pathak, D.D., *Mineras Engineering*, 2018, 129, 9. DOI: **10.1016/j.mineng.2018.09.008**
 11. “Single pot fabrication of N doped reduced GO (N-rGO) /ZnO-CuO nanocomposite as an efficient electrode material for supercapacitor application”, C. K. Maitya , G. Hatuia, K. Vermab, G. Udayabhanu, D.D. Pathak , G. C. Nayak, *Vacuum* 157 (2018) 145-154, DOI: **10.1016/j.vacuum.2018.08.019**
 12. “Extraction of rare earth metals (REMs) by organo-metallic complexation using PC 88A”, Kumari, A., Panda, R., Jha, M.K., Pathak, D.D., *Comptus Rendus Chimie*, 2018, **21**, 1029. DOI: **10.1016/j.crci.2018.09.005**
 13. “Evaluation of metal contamination and risk assessment to human health in a coal mine region of India: A case study of the north karanpura coalfield”, B. Neogy, A. K. Tewary, A. K. Singh, **D. D. Pathak**, *Human and Ecological risk assessment*, 2018, DOI: **10.1080/10807039.2018.1436434**
 14. “Water quality assessment of ground water samples using water quality index method of north karanpura coalfield, Jharkhand”, B. Neogy, A. K. Singh, **D. D. Pathak**, *International J Chem Tech Res* 2017, 10, 67.

15. "Palladium nanoparticles immobilized on a magnetic Chitosan-anchored Schiff base: Application in Suzuki-Miyaura and Heck-Mizoroki coupling reactions", Anuradha, S. Kumari, S. Layek, and **D. D. Pathak**, *New J. Chem.*, 2017, 41, 5595-6604, DOI:10.1039/C7NJ00283A
16. "Synthesis and crystal structures of salen-type Cu(II) and Ni(II) Schiff base complexes: Application in [3+2]-Cycloaddition and A³-coupling reactions", B. Agrahari, S. Layek, R. Ganguly, **D. D. Pathak**, *New J. Chem.*, 2018, 42, 13754-13762, DOI:10.1039/C8NJ01718B
- 17 "Synthesis and Characterization of a new Pd(II)-Schiff base complex [Pd(APD)₂]: An efficient and recyclable catalyst for Mizoroki-Heck and Suzuki-Miyaura reactions", S. Layek, Anuradha, B. Agrahari and **D. D. Pathak**, *J. Organomet. Chem*, 2017, 846, 105-112, DOI: 10.1016/j.jorganchem.2017.05.049
18. " Hydrogeochemistry of coal mine water of north karanpura coalfield, India: Implication for solute acquisition processes, dissolved, fluxes and water quality assessment", B. Neogy, A. K. Singh, **D. D. Pathak**, A. Chaturvedi, *Environmental Earth Sciences*, 2017, 76, 489.
19. "Chitosan-supported Copper(II)-Schiff base complexes: Applications in synthesis of 5-substituted 1Htetrazoles and oxidative homo-coupling of terminal alkynes" Anuradha, S. Layek, B. Agrahari and **D. D. Pathak**, *Chemistry Select*, **Chemistry Select**, 2017, 2, 6865, DOI: 10.1002/slct.201701252
20. "Synthesis, spectroscopic and single crystal X-ray studies on three new mononuclear Ni(II) pincer type complexes: DFT calculations and their antimicrobial activities", S. Layek, B. Agrahari, A. Tarafdar, C. Kumari, Anuradha, , R. Ganguly and **D. D. Pathak**, *J. of Mol. Struct.* 2017, 1141, 428-435, DOI:10.1016/j.molstruc.2017.03.114
21. "Room-Temperature In-Situ Design and Use of Graphene Oxide-SBA-16 Composite for Water Remediation and Reusable Heterogeneous Catalysis", H. Chaudhuri, S. Dash, R. Gupta, **D. D. Pathak**, and A. Sarkar, *Chem. Select*, 2017, 2, 1835-1842. DOI: 10.1002/slct.201601817
22. "Template-free single pot synthesis of SnS₂@Cu₂O/ reduced graphene oxide (rGO) nanoflowers for high performance super capacitors" G. Hatui, G. C. Nayak, G. Udayabhanu, Y. K. Mishrab and **D. D. Pathak**, *New J. Chem.*, 2017, 41, 2702-2716, DOI: 10.1039/C6NJ02965E
23. "Synthesis, characterization and crystal structure of Cu(II) complex of trans-cyclohexane-1,2-diamine: Application in synthesis of symmetrical biaryls", B. Agrahari, S. Layek, S. Kumari,

Anuradha, R. Ganguly and **D. D. Pathak**, *J. of Mol. Struct.* 2017, **1134**, 85-90, DOI: **10.1016/j.molstruc.2016.12.053**

24. "Chitosan supported Zn(II) mixed ligand complexes as heterogeneous catalysts for one-pot synthesis of amides from ketones via Beckmann rearrangement", Anuradha, S. Kumari, S. Layek and **D. D. Pathak**, *J. of Mol. Struct.* 2017, **1130**, 368-373, DOI: **10.1016/j.molstruc.2016.10.053**

25. "Synthesis, characterization and crystal structure of a diketone based Cu(II) complex and its catalytic activity for the synthesis of 1,2,3-triazoles", S. Layek, S. Kumari, Anuradha, B. Agrahari, R. Ganguly and **D. D. Pathak**, *Inorg. Chim. Acta* 2016, **453**, 735-741. DOI: **10.1016/j.ica.2016.09.048**

26. "Graphene oxide-TiO₂ composites: an efficient heterogeneous catalyst for the green synthesis of pyrazoles and pyridines", S. Kumari, A. Sekhar, **D. D. Pathak**, *New J. Chem.*, 2016 , **40**, 5053, DOI: **10.1039/C5NJ03380B**

27. "Synthesis and characterization of Cu(II) Schiff base complex immobilized on graphene oxide and its catalytic application in the green synthesis of propargylamines", S. Kumari, A. Sekhar, **D. D. Pathak**, *RSC Adv.*, 2016, **6**, 15340, DOI: **10.1039/C5RA25209A**

28. "Recovery of copper and recycling of acid from the leach liquor of discarded Printed Circuit Boards (PCBs)", P. K. Choubey, R. Panda, M. K. Jha, J. C. Lee, and **D.D. Pathak**, *Sep. Purif. Technol.*, 2015, **156**, 269, DOI: **10.1016/j.seppur.2015.10.012**

29. "Synthesis and development of Chitosan anchored copper(II) Schiff base complexes as heterogeneous catalysts for N-arylation of amines", Anuradha, S. Kumari, **D. D. Pathak**, *Tetrahedron Letters*, 2015, **56**, 4135, DOI: **10.1016/j.tetlet.2015.05.049**

30. "A New Catalyst and Solvent-free Green Synthesis of α -Hydroxy Phosphonates and α -Amino Phosphonates", S. Kumari, A. Shekhar and **D. D. Pathak**, *Chem. Sci. Trans.*, 2014, **3**, 45-54, DOI: **10.7598/cst2014.611**

31. "Ultrasound-Promoted Synthesis of 9-Aryl-1,8-dioxo-octahydroxanthenes Using TiO₂ as a Cheap and Reusable Catalyst", S. Kumari, A. Shekhar and **D. D. Pathak**, *Chem. Sci. Trans.*, 2014, **3**, 652-663. DOI: **10.7598/cst2014.783**

32. "Multi-Nuclear NMR Investigation of Nickel(II), Palladium(II), Platinum(II) and Ruthenium(II) Complexes of an Asymmetrical Ditertiary Phosphine", Gerald Joe. J. R., **Pathak**,

D. D.; Kapoor, P. N. *J. Korean Chem. Soc.* 2013, **57**, 726-730, DOI: **10.5012/jkcs.2013.57.6.726**

33. “Chloro(η^3 -allyl)dicarbonylmolybdenum(II) Complexes of Some Chiral and Achiral Ditertiaryphosphines”, Gerald Joe. J. R., **Pathak, D. D.**; Kapoor, P. N. *Cent. Eur. J. Chem.* 2012, **10**, 165-171.

34. “Zeolite (ZSM-5) as a highly efficient and heterogeneous Catalyst for the synthesis of β -Enaminones and β -Enamino Esters”, Shekhar, A.: **Pathak, D. D.**, *E-J. Chem.*, 2011, **8**, 1632-1637, DOI: **10.1155/2011/176829**

35. “Synthesis of Tetrahydrobenzo[*b*] pyran derivatives using Sodium Trifluoromethanesulphonate as an efficient catalyst”, Shekhar, A.; Dey, D.; **Pathak, D. D.**, *Int. J. Chem. Sci.* 2011, **9**, 1117-1125.

36. “CuCl₂.2H₂O-Catalysed One-pot Multi-component Synthesis of β -Acetamido Ketones”, Rajat S, Shekhar, A.; **Pathak, D. D.**, *Asian J. Res. Chem.* 2011, **4**, 1930-1934.

37. “Empirical modelling of chemoselectivity of Hydroxy Terminated Polybutadiene based solid Composite Propellant Slurry”, Mahanta, A. K.; Monika, G.; **Pathak, D. D.**, *Malaysian Polymer Journal*, 2010, **5**, 1-16.

38. Rheokinetic Analysis of Hydroxy Terminated Polybutadiene based solid propellant slurry” Mahanta, A. K.; Monika, G.; **Pathak, D. D.**, *E-Journal of Chemistry*, 2010, **7**, 171-179, DOI: **/10.1155/2010/750393**

39. “Facile Synthesis of Bis(indolyl)metanes Catalysed by Aluminium Nitrate Nonahydrate” Shekhar, A.; **Pathak, D. D.** *Res. J. Chem. Environ.* 2010, **14**, 19-23.

40. “Recent Advances in Development of eco-friendly solid composite propellants for rocket propulsion”, Mahanta, A. K.; **Pathak, D. D.**, *Res. J. Chem. Env.* 2010, **14**, 94-103.

41. “Effects of Fly Ash and Marble Waste addition of on Thermo-mechanical properties of Earthenware Wall Tile Composition”, Chakraborty, A. K.; Maiti, K. N.; **Pathak, D. D.**, *Industrial Ceramics* 2009, **29**, 157-164.

42. “Design and Development of a New Chelating Bis(phosphinite)-based Palladium(II) Catalyst and its Application to Heck Reaction”, **Pathak, D. D.**; Maheswaran, H; Prasanth, L.; Kantam, M. L. *Syn. Lett.*, 2007, **5**, 757-760, DOI: **10.1055/s-2007-970750**

43. "Effect on Fly Ash Addition on the Thermo-Mechanical Properties of Earthenware Wall Tile Composition", Chakraborty, A. K.; Maiti, K. N.; **Pathak, D. D.** *Advances in Applied Ceramics* **2007**, **106**, 196-201. DOI: **10.1179/174367607X198939**
44. "Effect of Marble Waste Addition on the Thermo-Mechanical Properties of Earthenware Wall Tile Compositions", Chakraborty, A. K.; Maiti, K. N.; **Pathak, D. D.** *Industrial Ceramics* **2006**, **26**, 173-180.
45. "Investigation on the Utilization of Marble Waste and Fly Ash in the Earthenware Wall Tile Composition, Part I: Physicochemical Characteristics of Raw Materials", Chakraborty, A. K.; Maiti, K. N.; **Pathak, D. D.** *Trans. Ind. Ceram. Soc.* **2004**, **63**, 169-177.
46. "An Efficient and Convenient Method for the Synthesis of Dialkoxymethanes Using Kaolinite as a Catalyst", **Pathak, D. D.**; Gerald, J. Joe. *Synth. Commun.*, **2003**, **33**, 1557-1561.
47. "Chiral Sandwich Compounds of Ruthenium(II) and (IV): X-ray Crystal Structure of $[\text{Ru}(\eta^5\text{-C}_5\text{H}_4(\text{neomenthyl})_2\text{I})^+\text{I}_3^-]$ ", **Pathak, D. D.**; Hutton, A. T.; Hyde, J.; Walkden, A.; White, C. *J. Organomet. Chem.* **2000**, **606**, 188-196, DOI: **10.1016/S0022-328X(00)00358-2**
48. "Reactions of Coordinated Phosphines and Arsines. Iron (II)-Facilitated and Direct Syntheses of Three- to Seven-Membered Heterocycles Containing Phosphorus and Arsenic. Crystal Structure of Iron(II) complexes of 1-Phenylphosphetane and 1-phenylarsetane", Barder, A.; Kang, Y. B.; Pabel, M.; **Pathak, D. D.**; Willis, A. C. *Organometallics* **1995**, **14**, 1434-1441, DOI: **10.1021/om00003a051**
49. "Copper(I)-Facilitated Methylation and Cyclic Alkylation of 1,2-phenylenbis(phosphine)", Kang, Y. B.; Pabel, M.; **Pathak, D. D.**; Wild, S. B. *J. Main Group Chem.* **1995**, **1**, 89-98, DOI: **10.1080/13583149512331338295**
50. "Enantioselective Alkylating Reagents; Crystal Structure of $[\text{Ru}\{\eta^5\text{-C}_5\text{H}_4(\text{C}_{10}\text{H}_{19})\}(\text{dppe})(\text{IEt})]^+\text{CF}_3\text{SO}_3^-[(\text{C}_{10}\text{H}_{19})=(+)\text{neomenthyl cyclopentadienyl}]$, $\text{dppe}=\text{Ph}_2\text{PCH}_2\text{CH}_2\text{PPh}_2$ ", **Pathak, D. D.**; Adams, H.; White, C. *J. Chem. Soc., Chem. Commun.* **1994**, 733-734, DOI: **10.1039/C39940000733**
51. "An unprecedented Mode of Co-ordination of BINAP ligand: Synthesis and Crystal Structure of $[\text{Ru}(\eta^5\text{-C}_5\text{H}_5)\{(R)\text{-BINAP}\}]^+\text{CF}_3\text{SO}_3^-$ and $[\text{Ru}(\eta^5\text{-C}_5\text{H}_5)\{(R)\text{-BINAP}\}\text{I}]$ ", **Pathak, D. D.**; Adams, H.; Bailey, N. A.; King, P. J.; White, C. *J. organomet. Chem.* **1994**, **479**, 237-245, DOI: **10.1016/0022-328X(94)84115-2**.

52. "Reactions of Coordinated Phosphines and Arsines. Iron(II) Facilitated Syntheses of 1-Phenylphosphetane and 1-Phenylarsetane", Barder, A.; **Pathak, D. D.**; Wild, S. B.; Willis, A.C. *J. Chem. Soc., Dalton Trans.* 1992, 1751-1752, DOI: **10.1039/DT9920001751**
53. (η^3 -allylic)Dicarbonylmolybdenum(II) Complexes of the Unsymmetrical Ditertiary Phosphines, $\text{Ph}_2\text{PCH}_2\text{CH}_2\text{P}(\text{C}_6\text{H}_4\text{X})_2$ ($\text{X}=\text{m-F}$, p-F or m-CF_3), Kapoor, P. N.; **Pathak, D. D.**; Gaur, G.; Mercykutty, P.C. *J. Organomet. Chem.* 1987, **322**, 71-75, DOI: **10.1016/0022-328X(87)85025-8**
54. "Octahedral Complexes of Ruthenium(II) with Some Fluorine Substituted Ditertiary Phosphines", Kapoor, P. N.; Kapoor, R. N.; **Pathak, D. D.**; Gaur, G. *Inorg. Chim. Acta* 1987, **131**, 27-31, DOI: **10.1016/S0020-1693(00)87902-5**
55. "Group VI Metal Hexacarbonyl Derivatives of Some Fluorine Substituted Ditertiary phosphines", Kapoor, P. N.; **Pathak, D. D.**; Gaur, G.; Mercykutty, P.C. *J. Organomet. Chem.* 1986, **311**, 103-109. DOI: **10.1016/0022-328X(86)80224-8**
56. "Ni(II), Pd(II) and Pt(II) Complexes of two New Ditertiary phosphines: 1-Diphenylphosphino-2-bis(m or p -fluorophenyl)phosphinoethane", Kapoor, P.N.; Kapoor, R. N.; **Pathak, D. D.**; Gaur, G. *Inorg. Chim. Acta* 1986, **112**, 153-157. DOI: **10.1016/S0020-1693(00)84489-8**.
57. "Synthesis of Three New Ditertiary Phosphines: 1-Diphenylphosphino-2-bis(m -fluorophenyl)phosphinoethane, 1-Diphenylphosphino-2-bis(p -fluorophenyl) phosphinoethane, 1-Diphenylphosphino-2-bis(m -trifluoromethylphenyl)phosphinoethane", Kapoor, P. N.; **Pathak, D. D.**; Gaur, G.; Mercykutty, P.C. *J. Organomet. Chem.* 1984, **276**, 167-170, DOI: **10.1016/0022-328X(84)80627-0**.

Chapter in Book:

1. A. K. Mahanta and **D. D. Pathak**, Chapter 11 in Book Polyurethane, "HTPB-Polyurethane: A Versatile Fuel Binder For Composite Solid Propellant" ISBN 979-953-307-642-2, edited by. **Dr. Fahmina Zafar**, Open Access Publisher, 2012, <http://dx.doi.org/10.5772/47995>

Conference attended and Papers presented:

1. "Graphene oxide and its composites as an emerging class of 2-D nanomaterials for sustainable catalysis", **Invited Inaugural Plenary Lecture** in the International Conference "ICEME-2018, San Diego, USA
2. "Composites of Graphene oxide as an emerging class of 2-D Materials in Catalysis and Pharmaceuticals", **D. D. Pathak, Key-note Speaker** in "National Conference on Innovation in Science and Energy Challenges in Health and Environment", Daulat Ram College, University of Delhi, Delhi, March 20-21, 2018.
3. "Synthesis, characterization and crystal structure of Cu(II) complex of trans-cyclohexane-1,2-diamine: Application in synthesis of symmetrical biaryls," B. Agrahari and **D. D. Pathak**, 1st Annual Workshop on Catalysis, IIT(ISM) Dhanbad, 06-09 March 2017, PP 07, Page No. 27.
4. "Synthesis and Characterization of a new Pd(II)-Schiff base Complex [Pd(APD)₂]: An efficient and recyclable catalyst for Heck-Mizoroki and Suzuki-Miyaura reactions," S. Layek and **D. D. Pathak**, 1st Annual Workshop on Catalysis, IIT(ISM) Dhanbad, 06-09 March 2017, PP 010, Page No. 29.
5. "Graphene oxide and its composites as novel heterogeneous catalysts in organic synthesis", International Conference on Futuristic Materials and Emerging Trends in Chemical Sciences-2016 (ICOFMAETICS-2016), 8-10 Feb 2016, Kanpur, U.P.
6. "Development of Chitosan-Anchored Zn(II) complexes as Heterogeneous catalysts for Beckmann rearrangement", National Conference on Recent Trends in R&D, Quality Control and Marketing in Chemical Industry, held at Jiwaji University, Gwalior from April 23-25, 2016 (**Invited talk, IL03**).
7. "Development of Copper(II)-based Homogeneous Catalysts for the Synthesis of 1,2,3-Triazoles and Symmetrical Biaryls, XXXV Annual Conference, Indian Council of Chemists, December, 22-24, 2016 H.V. Desai College, Pune (**Invited talk, IIL-03**).
8. "Recent Advances in Chitosan-Anchored Transition Metal Complexes", XXIV ICC Conference 2015, Uka tarsadia University, Bardoli, Surat, 26-28,December (Invited Lecture).
9. "Synthesis and Development of Chitosan- Anchored Zn(II) Schiff base complexes: An efficient heterogeneous catalysts for the synthesis of amides from ketones via Beckmann rearrangement", XXIV ICC Conference 2015, Uka tarsadia University, Bardoli, Surat, 26-28,December, IO-CYSA-04.
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13. "Graphene oxide supported as an efficient and green catalyst for the synthesis of amides from cyclic secondary amines and aromatic."
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14. "Highly Efficient one-pot synthesis of aminophosphonates using Zn(II) Schiff base complexes as catalysts", Anuradha, **Devendra D. Pathak**, XXXIII ICC Conference 2014, IP-20, Page no 92.
15. "Cu(II)-mediated synthesis of bis(indolyl)metanes from indole and aryl aldehydes," Samareesh Layek, **Devendra D. Pathak**, XXXIII ICC Conference 2014, IP-19, Page no 94.
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Topic: Cross-link Density of Hydroxyl Terminated Polybutadiene Based Polyurethane Elastomers from Stress-Strain Profile: An Eco-friendly Method
17. Indian Institute of Petroleum, Dehradun, March 22, 2013
Topic: Ruthenium-based Enantioselective Alkylating Reagents for Asymmetric Catalysis.
18. Department of Chemistry, Din Dayal University, Gorakhpur, June 20, 2013
Topic: Chiral Ruthenium(II) Complexes in Asymmetric Catalysis.
19. International Conference on Emerging Trends in Chemical Sciences (ICETCS 2013), held at Gandhinagar, Gujrat, March 14-15, 2013,
Topic: Template Synthesis of Cyclic Phosphines and Phosphorus Macrocycles.
20. 21st National Symposium on Catalysis, held at the Indian Institute of Chemical Technology, Hyderabad, February 11-13, 2013
Topic: Development of Enantioselective Alkylating Reagents for Asymmetric Catalysis.
21. SNIC-RSC Joint symposium on Inorganic Chemistry, held at Institute of Materials Research and Engineering, A* **STAR, Singapore**, January 7-8, 2013.
Topic: Synthesis, Characterization and Crystal Structure Determination of Rare Examples of Iodoethane Ruthenium (II) Complex $[\text{Ru}(\eta^5\text{C}_5\text{H}_5)(\text{dppe})(\text{ICH}_2\text{CH}_3)]^+\text{CF}_3\text{SO}_3$ [dppe= $\text{Ph}_2\text{PCH}_2\text{CH}_2\text{PPh}_2$].
22. XXXI Annual Conference of Indian Council of Chemists, held at Department of Chemistry, Saurashtra University, Rajkot, Gujrat, December 26-28, 2012
Topic: Synthesis of Cyclic Phosphines and Phosphorus Macrocycles: A Challenge to Inorganic Chemists.
23. International Conference on Chemistry and Materials: Prospects and Perspectives-2012 (ICCMPP-2012), held at Babasaheb Bhimrao Ambedkar University, Lucknow, December 14-16, 2012.
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