Dr. Soumyajit Dey

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Date of Birth: November 16, 1985, **Gender:** Male, **Nationality:** Indian

Resume Highlights

I'm a R&D scientist and a team leader with 15 years of research experience. I'm well versed from lab-developments to plant scale-ups for NPD, quality improvement and cost reduction projects. I'm well skilled in both organic and inorganic synthesis, varied purification techniques, product characterization, analytical data interpretation including handling highly air sensitive materials as well. Throughout my career I've completed multiple projects in different chemical fields. I'm a quick learner and very much familiar to any projects along with collaborative projects.

Research & Teaching Experience

- **Industrial & Accademic postdoctoral Research (Post PhD):**

  1. **July, 2019-till now:** Deputy Manager, R&D department, "***Sudarshan Chemical Industries Limited***", Sutarwadi, Pune, Maharashtra, India-412108.
  2. **July, 2018 – June, 2019:** Department of Chemistry, ***University of Pennsylvania, Philadelphia***, PA-19104, USA. (***Industrial Contract Research project*** with **"*Axalta Coating Systems*"** Philadelphia, USA).
  3. **November, 2015 – July, 2018:** Department of Chemistry, Temple University, Philadelphia, PA-19122, USA.

- **Doctorate Research (PhD):**

  December, 2008-August, 2015: Department of Chemistry, ***Indian Institute of Technology Kanpur***, UP-208016.

- **Teaching**:

  - Teaching assistant for 3 semesters at ***Indian Institute of Technology Kanpur***, UP-208016 in the subject of general chemistry and inorganic chemistry.
  - Theoretical and practical training in pigment chemistry at ***Sudarshan Chemical Industries Limited***", Sutarwadi, Pune, Maharashtra, India-412108.

Academic qualification:

Degree	University/Institute	Year of Passing
Ph.D. (Chemistry)	Indian Institute of Technology Kanpur, UP, India	2015
M.Sc.(Chemistry)	Bengal Engineering and Science University, Shibpur, WB, India	2008
B.Sc.(ChemistryHons)	Vidyasagar University, Midnapore, WB, India	2006
Higher Secondary	West Bengal Council of Higher Secondary Education	2003
Secondary	West Bengal Board of Secondary Education	2001

Expertise & Skills:

- **Management:**

  - Leading R&D team in developing new methods, modifying existing methods for process simplification and cost reduction.
  - Monitoring scale-up trials/batches in pilot and main plant (from gram scale to tons).
  - Collaboration with marketing and production stakeholders for new projects and follow ups.
  - Successful scale-ups throughout Lab-Pilot-Main plant for ***commercialized (Launched, 4 products)*** products.

- **Hands-on experience:**
  - **Synthesis**: Single/multi-step organic and inorganic synthesis (porphyrins, heterocycles and their various metal complexes).
  - **Sensitive products**: Conducted a wide range of reactions including chemical and air/moisture sensitive reactions using standard Schlenk line technique and Glove box.
  - **Product development**: Skilled in doing chemical reaction and purification from milligram-kilogram-ton scale in laboratory along with pilot & main plant commercial scale-up trails.
  - **Pigment Chemistry and dispersions**: Hands on experience in pigment syntheses (PY138, PY139, PY191, PR170), pigmentations, dispersions (**Plastic & Coating**), wet & dry milling, muller formulation followed by pigment drawdowns and colorimetric analyses. E.g. pigment shade, chroma, and brightness along-with tinctorial strength.
  - **Backward Integration**: Hands on experience on backward integration projects for in-house synthesis of starting materials, intermediates etc. for business case improvement (e.g. 8-Chloroquinaldin, 8-Aminoquinaldin, 1,3-Diiminoisoindoline, Ethyl carbazole, Nitro ethyl carbazole and so on).
  - **Corrosion project:** Hands on experience on finding efficient environ friendly Lanthanide based carboxylate corrosion inhibitor for substitution of toxic inhibitors and there analyses by highthroughput spectroscopic techniques.
  - **Analytical data collections, Analyses and interpretations:** Skilled in chemical structure analyses *via* NMR, 2D NMR, IR, ESI, UV-visible, Fluorescence, EPR and X-ray crystallography etc. Purity analysis via HPLC, LCMS, GC, GCMS etc.
  - Product purification via fractional distillation, crystallization, liquid-phase extraction, high performance liquid chromatography (HPLC), column chromatography.
  - Skilled in analysing electrochemical properties of organic and inorganic molecules *via* volt-metric methods.
  - Hands on experience on solar cell projects based on transparent conducting oxide coated thin layer glass slides.
  - Skilled in single crystal X-ray structure analysis using SHELXTL-97, WINGX, SIR97, DIAMOND, ORTEP and PLATON, and usage of basic technical packages like origin, chem-draw etc.
  - **Electrochemistry**: Expertise in different electrochemical analysis. E.g. Cyclic voltametry, spectro-electrochemical analysis etc. Lot of hands-on experience on electrochemical oxidation-reduction of different organic and inorganic compounds and complexes. Hands-on experience on cell set-up for electrochemical analyses. Various electrochemical studies on air and moisture sensitive materials.
- **Equipment experience:**
  - Equipment Operation: NMR instrument, UV-visible Spectrophotometer, Fluorescence Spectrophotometer, ESI-MS spectrophotometer, FT-IR, X-ray diffractometer, Circular dichrometer, Voltammetric, Spectro-electrochemical analysis, Rotary Evaporator, High-pressure autoclave.
  - Softwares handled: MS-Office, Chem-office Ultra, Adobe cloud, TopSpin 1.3 (Software for NMR analysis).
  - Computational analysis: Computational Modeling using Gaussian 03-09, program package: Geometry optimization of stationary state, Population analysis of molecular orbital, potential energy surface Scan.
  - Application used to search the online data base: Pubmed, Web of Knowledge, Scifinder.

Awards & Recognitions:

2008	Qualified **National Eligibility Test** (UGC-NET) in the subject Chemical Sciences (JRF and SRF awards)

2008	Qualified **Graduate Aptitude Test in Engineering** (GATE). All India Rank: **296**
2014	**Best Poster Award** [16th CRSI NationalSymposium in Chemistry, February 7-9,2014, held in IIT Bombay]
2020	**Good Job Card:** Sudarshan Chemical Industries Limited
2022	**Good Job Card:** Sudarshan Chemical Industries Limited

Research Publications

- **From Ph.D**

1. Sanfaori Brahma**,** Sk. Asif Ikbal, **Soumyajit Dey** and Sankar Prasad Rath*

   "Induction of supramolecular chirality in di-zinc(II) bisporphyrin via *tweezer* formation: synthesis, structure and rationalization of chirality"

   Chem. Commun. **2012**, *48*, 4070. (Impact factor: 5.996)

2. Ranjan Patra, Dipankar Sahoo, **Soumyajit Dey**, Debangsu Sil and Sankar Prasad Rath*

   "Switching Orientation of Two Axial Imidazole Ligands between Parallel and Perpendicular in Low-Spin Fe(III) and Fe(II) Nonplanar Porphyrinates"

   Inorg. Chem. **2012**,*51*, 11294. (Impact factor: 4.825)

3. Susovan Bhowmik, **Soumyajit Dey**, Dipankar Sahoo and Sankar Prasad Rath*

   "Unusual Stabilization of an Intermediate Spin State of Iron upon the Axial Phenoxide Coordination of a Diiron(III)–Bisporphyrin: Effect of Heme– Heme Interactions"

   Chem. Eur. J. **2013***, 19,* 13732. (Impact factor: 4.857)

4. **Soumyajit Dey** and Sankar Prasad Rath*

   "Syn–anti conformational switching in an ethanebridgedCo(II)bisporphyrin induced by external stimuli: effects of inter-macrocyclic interactions, axial ligation and chemical and electrochemical oxidations"

   *Dalton Trans.***2014**, *43*, 2301. (Impact factor: 4.174)

5. **Soumyajit Dey**, Sk. Asif Ikbal and Sankar Prasad Rath*

   "Self-assembly of cobalt(II) and zinc(II) tetranitro octaethylporphyrin via bidentate axial ligands: synthesis, structure, surface morphology and effect of axial coordination"

   *New J. Chem.***2014**, *38*, 1458. (Impact factor: 3.288)

6. **Soumyajit Dey**, Pritam Mondal and Sankar Prasad Rath*

   "Aggregation-controlled excimer emission in an axial anthracene-Sn(IV)porphyrin-anthracene triad in solid and solution phases"

   *New J. Chem.***2015**, *39,* 4100. (Impact factor: 3.288)

7. Debangsu Sil, **Soumyajit Dey**, Amit Kumar, Susovan Bhowmik and Sankar Prasad Rath*

   "Oxidation triggers extensive conjugation and unusual stabilization of two di-hemedication diradical intermediates: role of bridging group for electronic communication"

   *Chem. Sci.***2016**, *7,* 1212. (Impact factor: 9.346)

8. **Soumyajit Dey**, Debangsu Sil and Sankar Prasad Rath*

   "A Highly Oxidized Cobalt Porphyrin Dimer: Spin Coupling and Stabilization of the 4e-Oxidized Product"

   *Angew. Chem. Int. Ed.***2016**, *55*,996. [Impact factor: 12.959]

9. **Soumyajit Dey**, Debangsu Sil, Younis Ahmad Pandit and Sankar Prasad Rath*

   "Effect of Two Interacting Rings in Metalloporphyrin Dimers upon Stepwise Oxidations"

   Inorg. Chem. **2016**, *55*, 3229. (Impact factor: 4.825)

10. **Soumyajit Dey**, Debangsu Sil and Sankar Prasad Rath*

"Stepwise Oxidation of Ethene-Bridged Co(II)bisporphyrin: Interplay of Electrons between Metal and Ligand"

(manuscript under preparation)

- **From Post-Doctoral Research**

From 1st postdoctoral research

1. **Soumyajit Dey**,Jacob Dewey, Bradford B. Wayland*, Michael J. Zdilla*

   "Synthesis of a Tethered Dibenzotetramethyltetraaza[14]annulene Macrocycle and The Di-nickel(II) Derivative"

   New J. Chem. **2018**, *42*, 19369. (Impact factor: 3.288)

2. **Soumyajit Dey**, Bradford B. Wayland*, Michael J. Zdilla*

   "Solution and Solid State Properties for Low-Spin Cobalt(II)Dibenzotetramethyltetraaza[14]annulene [(tmtaa)CoII] and theMonopyridine Complex"

   Inorg. Chem. **2019**, *58*, 1224. (Impact factor: 4.825)

3. **Soumyajit Dey**, Ian G. McKendry, Bradford B. Wayland*, Michael J. Zdilla*

   "Synthesis of a pseudo-octahedral zinc complex: structure and fluxional behavior"

   (*Manuscript under preparation*)

4. Clifton R. Hamilton, Gregory. H. Imler, **Soumyajit Dey**, Bradford B. Wayland*, Michael J. Zdilla*

   "Iron(II/III) complexes of 2,5-Bis(α-pyridyl)pyrrolate Pincer"

   (*Manuscript under preparation*)

From 2nd postdoctoral research

1. Alexander V. Zabula, **Soumyajit Dey**, Jerome R. Robinson, Thibault Cheisson, Robert F.Higgins Gaurang Bhargava, Robert C. Nahas, Doug Cinoman, Eric J. Schelter*

   "**Screening of molecular lanthanide corrosion inhibitors by a high-throughput method**"

   Corros. Sci. **2020**, *165*, 108377. (Impact Factor: 6.479)

2. **Soumyajit Dey**, Alexander V. Zabula, Jerome R. Robinson, Thibault Cheisson, Robert F. Higgins, Gaurang Bhargava, Robert C. Nahas, Doug Cinoman, Eric J. Schelter*

   "**Study on Lowest Cost Environment Friendly Corrosion Inhibitors by High-Throughput Method: Synergistic Effect of Carboxylates in Lanthanide Complex**"

   (*Manuscript under preparation*)

Work Presented in Conferences:

1. **Soumyajit Dey,** Debangsu Sil and Sankar Prasad Rath*

   "*Syn–Anti* Conformational Switching in Porphyrin Dimer Induced by External Stimuli"

   Symposium on Modern Trends in Inorganic Chemistry–XV**,** December 13-16, 2013, held in Indian Institute of Technology Roorkee

2. **Soumyajit Dey,** Debangsu Sil and Sankar Prasad Rath*

   "Formation of π-cation Radicals in DihemeCenters: Unusual Stabilization of 'U' Conformer"

   16th CRSI National Symposium in Chemistry (NSC-16), February 7-9, 2014, held in Indian Institute of Technology Bombay. (**BEST POSTER AWARD**)

3. **Soumyajit Dey,** Bradford B. Wayland*, Michael J. Zdilla*

   "Towards tethering metal-centered radicals for substrate activations and catalysis"

   6th Mid-Atlantic Seaboard Inorganic Symposium (MASIS), University of Pennsylvania, Philadelphia, PA, United States, July 20, 2016 (2016)

4. **Soumyajit Dey,** Bradford B. Wayland*, Michael J. Zdilla*

   "Tethering metal-centered radicals for substrate activations and catalysis"

Abstracts of Papers, 252nd ACS National Meeting & Exposition, Philadelphia, PA, United States, August 21-25, 2016 (2016), INOR-158.

5. **Soumyajit Dey,** Bradford B. Wayland*, Michael J. Zdilla*

"Comparative studies of Co/Rh/Ni dibenzotetramethylaza[14]annulene (TMTAA) complexes with porphyrin analogs"

Abstracts of Papers, 255th ACS National Meeting & Exposition, New Orleans, LA, United States, March 18-22, 2018 (2018), INOR-986.