

**Curriculum Vitae**  
**Dr. Subrat Kumar Barik**

**Name:** Dr. Subrat Kumar Barik  
**Designation:** Assistant professor of Chemistry (OES-I)  
**Contact:** Address: Department of Chemistry,  
Bhadrak Autonomous College, Bhadrak  
756100, Odisha, India.  
Email: [subratkumar31@gmail.com](mailto:subratkumar31@gmail.com)  
Phone: +91-7735980553, +91-8754551904



**Date of birth:** June 01, 1990

### Educational Background

2012-2017 **Indian Institute of Technology Madras** Chennai, India  
Ph.D. in Inorganic Chemistry under the supervision of Prof. Sundargopal Ghosh, in Department of Chemistry. Thesis: Synthesis and Reactivity of Group 9 Dimetallaborane and Dimetallaheteroborane Compounds.

2010-2012 **Indian Institute of Technology Kanpur** Kanpur, India  
Master of Science, Department of Chemistry, A full semester project completed under the supervision of Prof. Sabyasachi Sarkar. Thesis: Attempted Synthesis of Manganese Cubane Core Oxygen Evolving Complex  $Mn_3CaO_4$  of Photosystem II.

2007-2010 **Ravenshaw University, Cuttack** Odisha, India  
Bachelor of Science in chemistry (Hons.), Physics and Mathematics, Department of Chemistry.

### Professional Background

**Current Employment** **Bhadrak Autonomous College** Bhadrak, Odisha, India  
Assistant Professor of Chemistry (Aug. 2023 - Present)

**Research Experience** **National Dong-Hwa University** Hualien, Taiwan  
MOST Post-doctoral Fellow, Department of Chemistry. (Oct. 2018-Feb. 2020)  
Topic: Synthesis and Applications of Ligand Protected Group 11 SuperatomicMetal Nanoclusters and Their Alloys.

**Indian Institute of Technology Bombay** Mumbai, India  
Institute Post-doctoral Fellow, Department of Chemistry. (March 2018-Sept. 2018)  
Topic: Synthesis of Low Coordinate Transition metal Complexes and Metallophosphates and to study their SMM property.

### Funded Project details

Extramural research funding under MRIP-2023 (9.7 lakh) on the topic "Development of Atomically precise Cu(0) and Cu(I)-polyhydrido Nanoclusters for their utilizations in catalysis and CO<sub>2</sub> reduction (Project: 23EM/CH/33, **continuing**).

1. Helical self-assemblies of molecule-like coinage metal nanoclusters and their emerging applications, **S. K. Barik**,\* M. S. K. Rao, B. R. Jali,\* J.-F. Halet,\* H. S. Jena,\* *Coord. Chem. Rev.* **2025**, 525, 216314.
2. Surface modifications of eight-electron palladium silver superatomic alloys: **S. K. Barik**, C.-Y. Chen, T.-H. Chiu, Y.-Rong Ni, F. Gam, I. Chantrenne, S. Kahlal, J.-Y. Saillard and C. W. Liu *Communications Chemistry*, **2022**, 5, 151 (*Nature portfolio journal*).
3. Polyhydrido Copper Nanoclusters with a Hollow Icosahedral Core:  $[\text{Cu}_{30}\text{H}_{18}\{\text{E}_2\text{P}(\text{OR})_2\}_{12}](\text{E}=\text{S}$  or Se;  $\text{R}=\text{}^n\text{Pr}$ ,  $\text{}^i\text{Pr}$  or  $\text{}^t\text{Bu}$ ), **S. K. Barik**, S.-C. Huo, C.-Y. Wu, T.-H. Chiu, J.-H. Liao, X. Wang, S. Kahlal, J.-Y. Saillard, C. W. Liu, **2020**, *Chem. Eur. J.* **2020**, 26, 10471, (*Cover page*).
4. Mono- and Hexa-Palladium Doped Silver Nanoclusters Stabilized by Dithiolates, **S. K. Barik**, Tzu-Hao Chiu, Yu-Chiao Liu, Ming-Hsi Chiang, Franck Gam, Isaac Chantrenne, Samia Kahlal, Jean-Yves Saillard, C. W. Liu, *Nanoscale*, **2019**, 11, 14581.
5. Unified reciprocity of dithiophosphate by dichalcogenophosph(in)ate ligands on copper hydride nanoclusters via ligand exchange reaction, Po-Yu Lin, Dai-Ying Li, Feng-Hsien Ho, Jian-Hong Liao, **S. K. Barik**, C. W. Liu, *J. Chin. Chem. Soc.*, **2019**, 66, 987.
6. Electron Precise Group 5 Dimetallaheteroboranes  $[\{\text{CpV}(\mu\text{-EPh})\}_2\{\mu\text{-}\eta^2\text{:}\eta^2\text{-BH}_3\text{E}\}]$  and  $[\{\text{CpNb}(\mu\text{-EPh})\}_2\{\mu\text{-}\eta^2\text{:}\eta^2\text{-B}_2\text{H}_4\text{E}\}]$  (E = S or Se): M. G. Chowdhury, **S. K. Barik**, K. Saha, K. Bakthavachalam, A. Banerjee, V. Ramkumar and S. Ghosh, *Inorg. Chem.*, **2018**, 57, 985.
7. Chemistry of Triple-Decker Sandwich Complexes Containing Four-Membered Open  $\text{B}_2\text{E}_2$  Ring (E = S or Se): B. Joseph, **S. K. Barik**, R. Ramalakshmi, G. Kundu, T. Roisnel, V. Dorcet and S. Ghosh, *Eur. J. Inorg. Chem.*, **2018**, 2045.
8. Synthesis and structural characterization of a diruthenium pentalene complex,  $[\text{Cp}^*\text{Ru}\{(\text{Cp}^*\text{Ru})_2\text{B}_6\text{H}_{14}\}(\text{Cp}^*\text{Ru})]$ : B. Joseph, **S. K. Barik**, S. K. Sinha, T. Roisnel and S. Ghosh, *J. Chem. Sci.*, **2018** 130, 89.
9. Synthesis and characterization of diruthenaborane analogues of pentaborane(11) and hexaborane(10): B. Joseph, S. Gomosta, **S. K. Barik**, S. K. Sinha, T. Roisnel, V. Dorcet, J. F. Halet and S. Ghosh, *J. Organomet. Chem.*, **2018**, 865, 29.
10. Hetero-dimetallaboranes of group 4 and 9 metals: Analogues of pentaborane(11) and hexaborane(12): D. K. Roy, A. De, R. Prakash, **S. K. Barik** and S. Ghosh, *Eur. J. Inorg. Chem.*, **2017**, 4452.
11. Synthesis, Chemistry, and Electronic Structures of Group 9 Metallaboranes : R. borthakur, S. Kar, **S. K. Barik**, S. Bhattacharya, G. Kundu, B. Varghese and S. Ghosh, *Inorg. Chem.*, **2017**, 56, 1524.
12. Extended Sandwich Molecules Displaying Direct Metal-Metal Bonds: **S. K. Barik**, M. G. Chowdhury, S. De, P. Parameswaran and S. Ghosh, *Eur. J. Inorg. Chem.*, **2016**, 4546.
13. Reactivity of  $\text{CS}_2$  Molecule: Synthesis and Structures of transition-metal species with dithioformate and/or methanedithiolate ligands: C. E. Rao, **S. K. Barik**, K. Yuvaraj, K. Bakthavachalam, T. Roisnel, V. Dorcet, J.-F. Halet and S. Ghosh, *Eur. J. Inorg. Chem.*, **2016** 4913.

14. Electron-Precise 1,3-Bishomocubanes: A Combined Experimental and Theoretical Study: **S. K. Barik**, C. E. Rao, K. Yuvaraj, R. Jagan, S. Kahlal, J. -F. Halet and S. Ghosh, *Eur. J. Inorg. Chem.*, **2015**, 5556.
15. Synthesis and Chemistry of the Open-cage Cobaltaheteroborane Cluster  $[(\eta^5\text{-C}_5\text{Me}_5)\text{Co}]_2\text{B}_2\text{H}_2\text{Se}_2$ : A Combined Experimental and Theoretical Study: **S. K. Barik**, V. Dorcet, T. Rosinel, J. -F. Halet and S. Ghosh, *Dalton Trans.*, **2015**, 44, 14403.
16. Unprecedented Ferrocene-Quinoline Conjugates: Facile Proton Conduction via 1D Helical Water Chains and Selective Chemosensor for Zn(II) ion in Water: S. J. Ponniah, **S. K. Barik**, R. Borthakur, A. Thakur, B. Garai, S. Jana and S. Ghosh, *RSC Adv.*, **2015**, 5, 15690.
17. Chemistry of Group 9 Dimetallaborane Analogues of Octaborane(12): **S. K. Barik**, D. K. Roy and S. Ghosh, *Dalton Trans.*, **2015**, 44, 669.
18. Triazolyl Alkoxy Fischer Carbene Complexes in Conjugation with Ferrocene/Pyrene as Sensory Units: Multifunctional Chemosensor for Pb(II) and Zn(II) Ions: S. J. Ponniah, **S. K. Barik**, A. Thakur, R. Ganesamoorthi and S. Ghosh, *Organometallics*, **2014**, 33, 3096.
19. Metallaboranes from Metal Carbonyl Compounds and Their Utilization as Catalyst for Alkyne Cyclotrimerization: V. P. Anju, **S. K. Barik**, B. Mondal, V. Ramkumar and S. Ghosh, *ChemPlusChem*, **2014**, 79, 546.
20. A Novel Heterometallic  $\mu_9$ -Boride Cluster: Synthesis and Structural Characterization of  $[(\eta^5\text{-C}_5\text{Me}_5\text{Rh})_2\{\text{Co}_6(\text{CO})_{12}\}(\mu\text{-H})(\text{BH})\text{B}]$ : D. K. Roy, **S. K. Barik**, B. Mondal, B. Varghese and S. Ghosh, *Inorg. Chem.*, **2014**, 53, 667.
21. Synthesis, Characterization Hypoelectronic Metallaboranes: Synthesis, Structural Characterization and Electronic Structures of Metal-Rich Cobaltaboranes: K. K. V. Chakrahari, D. Sharmila, **S. K. Barik**, B. Mondal, B. Varghese and S. Ghosh, *J. Organomet. Chem.*, **2014**, 749, 188.
22. Synthesis, Characterization and Electronic Structures of Rh and Co analogues of Decaborane-14: **S. K. Barik**, D. K. Roy, D. Sharmila, R. Ramalakshmi, K. K. V. Chakrahari, S. K. Mobin, S. Ghosh, *Proc. Natl. Acad. Sci. India*, **2014**, 84, 121.
23. New Heteronuclear Bridged Borylene Complexes That Were Derived from  $[(\text{Cp}^*\text{CoCl})_2]$  and Mono-Metal- Carbonyl Fragments: D. Sharmila, K. Yuvaraj, **S. K. Barik**, D. K. Roy, K. K. V. Chakrahari, R. Ramalakshmi, B. Mondal, B. Varghese and S. Ghosh, *Chem. Eur. J.*, **2013**, 19, 15219.

## Conferences

1. "A Novel Heterometallic  $\mu_9$  -Boride Cluster: Synthesis and Structural Characterization of  $[(\eta^5\text{-C}_5\text{Me}_5\text{Rh})_2\{\text{Co}_6(\text{CO})_{12}\}(\text{BH})_2]$ ": D. K. Roy, **S. K. Barik** and S. Ghosh. A poster presentation in Modern Trends in Inorganic Chemistry (MTIC-XV) international conference, Indian Institute of Technology Roorkee, Uttarakhand, 13-16 December **2013**.
2. "Chemistry of Group 9 Dimetallaborane analogues of Octaborane(12)": **S. K. Barik**, D. K. Roy and S. Ghosh. A poster presentation in an International Conference on Structural and Inorganic Chemistry CSIR-National Chemical Laboratory and IISER Pune, India, 4-5 December **2014** (*CrystEngComm* Poster award).
3. "Polyhydrido Copper Nanoclusters with a Hollow Icosahedral Core:  $[\text{Cu}_{30}\text{H}_{18}\{\text{E}_2\text{P}(\text{OR})_2\}_{12}]$  (E = S or Se; R = <sup>n</sup>Pr, <sup>i</sup>Pr or <sup>t</sup>Bu)" **S. K. Barik**, Shou-Chih Huo, Chun-Yen Wu, Jean-Yves Saillard,

- C. W. Liu. A poster presentation in Asian Chemical Congress (ACC-2019) international conference, Taipei International Convention Center, Taipei, Taiwan, 08-12 December 2019.
- A talk was delivered on the topic "Synthesis and Applications of Ligand Protected Group 11 Superatomic Metal Nanoclusters and Their Alloys" by **S. K. Barik** as a Resource person in International Webinar on Recent Advances in Material Sciences organized by S.N. College, Rajkanika, India, 6-7 February 2021.
  - Participated in the conference in RESTRUCTURING CURRICULUM TO SYNCHRONISE WITH RESEARCH TRENDS (RCSRT-23) organized by Dhenkanal Autonomous College, Dhenkanal in collaboration with Orissa Chemical Society, on 18 -19th Nov. 2023.

#### FDP attended

- Participated and successfully completed a 5 day online FDP program on the theme "Inculcating Universal Human Values in Technical Education" organized by All India Council for Technical Education (AICTE) from 19-23 December 2022.
- Participated and successfully completed a 5 day online FDP program on the theme "Sustainable Chemistry for Environmental Protection" organized by Department of Chemistry, ITER, Siksha 'O' Anusandhan, Deemed to be University from 9-14th January, 2023.

#### Awards / Fellowships

- Best Teacher Award 2023 from Chemistry Department, C.V. Raman Global University.
- MOST (Taiwan) Post-doctoral research Fellowship ( Oct. 2018- Feb. 2020)
- Institute Post-doctoral Fellowship, IIT Bombay (March 2018-September 2018)
- Institute Pre-doctoral Fellowship as thesis was submitted within four and half months, IIT Madras (November 2016- May 2017)
- Rennes Metropole Mobility Grant for Incoming Foreign Ph.D. Students (January-May 2015),
- Senior Research Fellowship (SRF), India (July 2014-2016)
- A *CrystEngComm* Poster Prize from Royal Society Science (2014)
- Qualified national level Graduate Aptitude Test in Engineering (GATE)- 2012
- Qualified national level Joint Admission to M.Sc. (JAM) Entrance- 2010
- Merit-Cum-Means Scholarship (2007-2010), SBF scholarship (2010-2012)

#### Teaching Experience

- Teaching B.Sc. and M.Sc. students in Department of Chemistry Bhadrak Autonomous College, Bhadrak (August 2023-Present).
- Taught B.Tech and M.Sc. students in Department of Chemistry, C.V. Raman Global University, Khurda, Bhubaneswar (October 2022-July 2023).
- Taught B.Tech and M.Sc. students in Department of chemistry, VSSUT, Burla (April 2022-October 2022).
- Chemistry laboratory, Teaching Assistant(January 2013-2015)
- Supervised and assisted M.Sc. students (four semesters) in organometallic synthetic chemistry techniques
- Demonstrated each and every step of reactions to the students with keeping an eye on each individual to complete the experiments with accurate scientific notes.

## **Mentoring Experience**

- Supervising one Ph.D. student (Name: Balaram Das) in Bhadrak Autonomous College, Bhadrak affiliated to F.M. University, Balasore.
- Supervised 2 M.Sc. dissertation in Bhadrak Autonomous College, Bhadrak
- Supervised one M.Sc. dissertation in C.V. Raman Global University culminating in a successful defense on the topic: "Helical Self-Assembly of Coinage Metal Atomically Precise Nanoclusters."
- Co-supervised a M.Sc. project student for one year during my Ph.D., resulting in the successful completion of a project on transition metal boron chemistry.
- Co-supervised one master's student and one undergraduate student for a year during my postdoctoral tenure at National Dong-Hwa University, Taiwan.

## **Membership of Academies / Institutions / Professional Societies**

- Life Member of "Orissa Chemical Society" Membership No. -LM/1275/24
- Co-coordinator, District Level Hackathon-2024 held on date 06.08.2024, Bhadrak Auto. College, Bhadrak
- Member of IQAC cell, Bhadrak Auto. College, Bhadrak
- Member of Research and Development cell, Bhadrak Auto. College, Bhadrak