
ARINDAM SARKAR (PhD)

*Personal Information*:

Ph: +91-8506918987; Email: sararindam@gmail.com;

Linkedin: https://in.linkedin.com/in/arindam-sarkar-ba30591a

Current Address: B110, Raheja Vistas Apt, Nacharam, Hyderabad, 500076

Passport: India; Visa: Valid US tourist visa till 2028; Vaccination status: Covid vaccinated


Looking for a professional opportunity where my knowledge and experience can be utilized

AREA OF EXPERTISE: Organic and Medicinal Chemistry, Lipid based anticancer drug development, Analytical Characterization, Liposomal drug delivery, Structure activity relationship, Tech Transfer, Early Process development of Drug Substance and Drug Product, Training Junior Researcher, Providing Leadership, Up to date with current oncology needs to guide a team towards NCE development

## KEY ACHIEVEMENTS

- Led a team of 10-12 organic and formulation chemists for the lead identification and optimization.
- Led 15-25 member teams to complete discovery oncology projects.
- Successfully performed technology transfer and process development of the lead compound and its intermediates. Have experience in dealing with several CROs and chemistry consultants worldwide.
- Successfully completed INR 3500000 grant from SERB as Principal Investigator.
- Successfully completed an INR 3900000 DST grant, as key research personnel, which had international collaboration with Russia, China and USA.
- Worked on different kinds of synthetic chemistry projects in the last 20 years (including my PhD). Those included medicinal chemistry, catalysis, material and chemo-sensor applications.
- Led the chemistry team to publish papers in high impact journals and patent applications.
- Worked as chemistry and formulation departmental head for 5 years in Invictus Oncology / Akamara Biomedicine.

## KEY SKILLS

Organic–Inorganic-Medicinal Chemistry | Analytical aptitude | Liposomal Formulation | Leadership | Managing big interdisciplinary groups | Catalysis | Structure and target based drug design | Early process development | Technology transfer for Phase 1 drug substance and drug product | ICH guidelines | FDA regulations | cGMP production of drug substance | CRO selection and collaborative work with CROs | Expert in scientific writings for publications and patents | Pre-IND and IND documentation | Excellent communication skills | **Can actively work on the bench if required**

## WORK EXPERIENCE

| **Designation** | **Job Responsibilities** |
|---|---|
| Director: Discovery Chemistry (Equivalent to Principal Scientist)<br>In a mid-size CRO (DevSynthesis) in Hyderabad, India<br>June-Aug 2021 | Managing a team of chemists towards the completion of R&D and early stage scale up process development for clients from different parts of the world. Attending client meetings. Exchanging information from client to research group and vice-versa. Participating in chemistry troubleshoot discussions. Guiding chemists in the bench whenever required. Providing leadership to the full chemistry unit. ROS design. Scifinder and Reaxys search. Helping chemists in troubleshooting chemistry issues. |
| Scientist Fellow (20% time)<br>*IIRC, Delhi*<br>(2013 Aug - 2021 May) | 1) Getting research grants from govt organizations<br>2) Conducting research work as Principal Investigator<br>3) Research publication in International journals |
| Principal Scientist II: (80% time)<br>Group Leader: Drug Substance Development<br>*Akamara Biomedicine, (formerly known as Invictus Oncology) Delhi* 2019 Oct – 2020 Oct | **Job Responsibilities as Chemistry Head of Akamara Biomedicine and Invictus Oncology**<br>• Independently manage and direct chemistry and formulation part of drug discovery projects<br>• DS-DP process development. Analytical expt. Stability expt. Tech transfer.<br>• Responsible for optimal utilization of resources in the specific project team through monitoring, measuring and reporting on scientific issues, opportunities and developmental plans and achievements within agreed formats & timescales.<br>• Responsible for driving career advancement plans, objective / goal setting, deciding on the Goals and Objectives for team members in conjunction with CTO and VP.<br>• Ensure adherence to the various policies & processes in project team independently or in conjunction with CTO and VP.<br>• Manage and drive the project through interdepartmental coordination and communications.<br>• Lipid based drug molecules synthesis with different amino-acids linkers.<br>• Synthesis of linkers for ADCs.<br>• Troubleshooting chemistry and formulation problems.<br>• Expert in managing projects as the scientific intermediate between CRO and client.<br>• Evaluating the performance of scientists.<br>• Well-versed with GMP/GLP/ICH guidelines and documentation.<br>• Technology transfer and early process development<br>. |
| Principal Scientist I:<br>*Invictus Oncology, Delhi*<br>2015- 2019 | |

| | |
|---|---|
| Scientist 1<br>*Invictus Oncology, Delhi*<br>2013- 2015 | Design and Synthesis of organic and organometallic small molecules as anticancer drugs. |
| Guest Lecturer<br>*Ananda Chandra College, University of North Bengal*<br>2012-2013 | Taking Chemistry honours theoretical and practical classes |
| Post -doctoral researcher<br>*University of California Riverside (UCR)*<br>2006-2012 | 1) Organic synthesis<br>2) Crystallization techniques of air sensitive radicals<br>2) Leading chemistry group<br>3) Writing manuscript<br>4) Full execution of project with minimum supervision |
| **EDUCATION** | |
| PhD<br>*Indian Institute of Science (IISc)*<br>*2006*<br>Thesis Title: Studies of Phosphorus Functionalized Calix[4]arenes and their Palladium Complexes<br>Supervisor: Prof. S. S. Krishnamurthy | 1) Main group chemistry; 2) Supramolecular Organic chemistry; 3) Organometallics; 4) Catalysis; 5) NMR; 6) X-ray crystallography; 7) Writing manuscripts and projects. |
| Master of Science (MSc) (Chemistry)<br>University of North Bengal, India<br>Marks: 73% (1st class with distinction) | |
| **PROFESSIONAL TRAINING**<br>Qualified Team Management Certificate Course in 2021 (Govt of India Initiative) which includes basic team management skills, decision making, motivating team members, Goal setting and other relevant techniques to align the team with organizational goals | |

WORK SUMMARY: I have 15 years of post-PhD experience which includes 8 years of industrial experience. I have successfully participated in discovery of an anticancer drug and translated lab scale API and formulation technology to GMP scale production following ICH guidelines and kept one compound ready for Investigational New Drug (IND) filing to the US FDA. Recently I led the chemistry, formulation and CMC teams at Akamara Biomedicine, Delhi. My team has successfully optimized and tech-transfer a lipid functionalized anticancer drug up to 2 Kg GMP production and 8 Lit liposomal formulation batches. Lead chemistry team to synthesize linkers for ADCs. Some of the other medicinal chemistry projects includes Bortezomib, CSF 1R inhibitor etc. One of my research proposals has been funded by the Department of Science and Technology's SERB division, India, for developing novel anticancer drugs. Organization has carried out many discovery research with the grant which helped to better understand our pipeline molecules. Given intellectual input in writing many patent applications which have been considered as company's assets. I have represented the company to our US stakeholders for several years. Expert in presenting R&D work to outside audiences as well as investors. Provided leadership to the CMC team and collaborated with many CROs for scaling up of our compounds. I also have 6 years post-doctoral experience in organic synthesis and crystallization of organic radicals. In my PhD I have handled extremely moisture sensitive compounds and got my training in NMR, IR, X-ray crystallography etc analytical techniques.

## COLLABORATION: SCALE UP - TECH TRANSFER - PROCESS DEVELOPMENT

- Peptech Corporation, China : 20 Kg production of a nonGMP starting material
- Helsinn Advanced Synthesis, Switzerland: : Process development of NCE (New chemical entity)
- Alcami corporation, USA : GMP production of NCE
- Latitude pharmaceuticals, USA: : Process optimization and up to 8 L production of liposomal formulation
- Solid Form Solutions, UK: : Purification by crystallization and particle morphology analysis
- Plough Center-University of Tennessee Health Science Center : Formulation process optimization and GMP production

## AWARDS AND HONOURS

- Working as a key research personal in a multinational **BRICS project** "Boron and gadolinium nanoparticles for cancer diagnosis and therapy" (Grant amount 39 lakh, **DST/IMRCD/BRICS/PILOTCALL1/BGNCDT/2017(G))**
- Completed 35 Lakh grant **Project from SERB (2016-2019**) as Principal Investigator on a project "Phenalenyl Based Platinum Complexes: Development of Efficacious, Safe and Fluorescent Anticancer Drugs" **(Grant No. EMR/2016/000357)**
- "Best poster" award in the In-house symposium of the Department of Inorganic and Physical chemistry, Indian Institute of Science, 2003.
- "Best seminar" award of the Department of Inorganic and Physical chemistry, Indian Institute of Science, 2003.
- Qualified for the Graduate Aptitude Test in Engineering (GATE)–1999 with an all India rank 120. Conducted by Government of India.
- Qualified for the National Eligibility Test for the Lectureship-1999. Conducted by Government of India.

## WORKSHOP, CONFERENCES AND PRESENTATIONS

- **Speaker**: IDDST-Osaka-Japan July-2017, delivered a lecture on the Anticancer drugs and its liposomal formulation.
- **Speaker**: IDDST-Boston Aug-2018, delivered a lecture on the new anticancer drugs developed under SERB, India grant.
- **Speaker:** Frontiers in Inorganic Chemistry: Catalytic and Biomedical Applications: Jan 2020, IISER Kolkata, India.
- Poster presentations: a) AACR, Cancer Res 2014;74 (19 Suppl): Abstract No 4483, b) ASCO Breast Cancer Symposium 2015, Abstract No. 153, c) San Antonio Breast Cancer Symposium (SABCS), P5-03-03, Dec 2015, d) MTIC-XVI, 2015, Poster number-196, Abstract page number 334; e) CRSI-NSC Symposium, IICT Hyderabad, July 2017.

- Attended: CPhI india; Mumbai; India, Dec 2015
- Attended: Ramanbhai Foundation 7th International Symposium on Current Trends in Pharmaceutical Sciences; Ahmedabad, India, Feb 2015.
- Attended: ACS Industry Symposium: Mumbai, India, Dec 2017.

## KEY PUBLICATIONS

**Publications as corresponding author (Principal Investigator/Project Lead)**

**1)** Phenalenyl Based Platinum Anticancer Compounds with Superior Efficacy: Design, Synthesis, Characterization, and Interaction with Nuclear DNA; P. Dutta, S. Kumari, J. Paulraj, R. Sharma, G Vijaykumar, H. Das, Sreejyothi P., S. Sil, S. Mandal, A. Sengupta*, Arindam Sarkar*; ***New Journal of Chemistry***, 2021, *New Journal of Chemistry*, 2021, **45**, 10524 - 10533

**2) "**Effects of linkers on the Development of Liposomal Formulation of Cholesterol Conjugated Cobalt bis(dicarbollides) for Boron Neutron Capture Therapy in Cancer" R. Dubey, **A. Sarkar**,* Z. Shen, V. I. Bregadze, I. B. Sivaev, A. A. Druzina, O. B. Zhidkova, A. V. Shmal'ko, I. D. Kosenko, Sreejyothi P., S. Mandal, Narayan S. Hosmane; ***Journal Of Pharmaceutical Sciences***, Dec 2021, 110, 1365.

**3**) "Boron-Containing Lipids and Liposomes: New Conjugates of Cholesterol with Polyhedral Boron Hydrides" V. I. Bregadze*, I. B. Sivaev, A. Semioshkin, A. V. Shmal'ko, I. D. Kosenko, K. V. Lebedeva, S. Mandal, P. Sreejyothi, R. D. Dubey, **A. Sarkar***, Z. Shen*, A. Wu, N. S. Hosmane, ***Chemistry – A European Journal***, 2020, 26, 13832.

**4**) "A Safe and Efficacious Pt(II) Anticancer Prodrug: Design, Synthesis, In-vitro Efficacy, Role of Carrier Ligand and In-vivo Tumour Growth Inhibition" P. Dutta, R. Sharma, S. Kumari, R. D. Dubey, S. Sarkar, J. Paulraj, G. Vijaykumar, M. Pandey, L. Sravanti, M. Samarla, H. S. Das, Yashpal, Heeralal B, R. Goyal, N. Gupta, S. K. Mandal, A. Sengupta*, **A. Sarkar*** ***Chem. Comm***, 2019, 55, 1718.

**5**) "First Phenalenone Based Receptor for Selective Iodide Ion Sensing" A. Mitra, A. Pariyar, S. Bose, P. Bandyopadhyay, **A. Sarkar***; ***Sensors and Actuators B, Chemical***, (2015), 210, 712.

**6**) "Design, Synthesis and Photochemical Properties of a Phenalenone-Based pH Sensor: Switchable pH Sensing in Four Detectable Channels" A. Mitra, S. Bose, S. Biswas, P. Bandyopadhyay, **A. Sarkar***; ***ChemPlusChem***, 2018, 83, 832.

**7**) "Novel platinum compounds and nanoparticles as anticancer agents", **A. Sarkar***, **Pharmaceutical Patent Analyst**, (2018) Vol 7, No. 1. (Review)

**Publications as 1st author/Senior author/Co-author**

**8**) "Computationally designed antibody–drug conjugates self-assembled via affinity ligands"
N. Gupta, A. Ansari, G. V. Dhoke, M. Chilamari, J. Sivaccumar, S. Kumari, S. Chatterjee, R. Goyal, P. K. Dutta, M. Samarla, M. Mukherjee, **A. Sarkar**, S. K. Mandal, V. Rai, G. Biswas, A. Sengupta, S. Roy, M. Roy & S. Sengupta, ***Nature Biomedical Engineering*** (2019) 3, 917.

**9**) "Development of an antibody-drug conjugate platform using platinum as a linker" N. Gupta, J. Kancharla, S. Kaushik, A. Ansari, S. Hossain, R. Goyal, M. Pandey, J. Sivaccumar, S. Hussain, **A. Sarkar**, A. Sengupta, S. K Mandal, M. Roy, S. Sengupta, ***Chemical Science***, (2017), 8(3), 2387-2395.

**10**)"Synthesis of Tetrachalcogenide-Substituted Phenalenyl Derivatives: Preparation and Solid-State Characterization of Bis(3,4,6,7-tetrathioalkyl-phenalenyl)boron Radicals" P. Bag, S. K. Pal, M. E. Itkis, **A. Sarkar**, F. S. Tham, B. Donnadieu, R. C. Haddon, ***Journal of the American Chemical Society*** (2013), 135(35), 12936-12939.

**11**) "Synthesis, crystallization, electrochemistry and single crystal X-ray analysis of a methoxy-substituted-tris-phenalenyl based neutral radical"; Arindam Sarkar, Fook S. Tham and Robert C. Haddon; ***J. Mater. Chem***., 2011, 21, 1574.

**12**) "Synthesis, Crystallization, Electrochemistry and Single Crystal X-ray Analysis of a Methoxy-Substituted Tris-Phenalenyl Based Neutral Radical" **A. Sarkar**, F. S. Tham, R. C. Haddon, ***Journal of Materials Chemistry***, (2011), 21, 1574-1581.

**13**) "Hysteretic Spin and Charge Delocalization in a Phenalenyl-Based Molecular Conductor" S. K Pal, P. Bag, A. Sarkar, Xiao-Liu Chi, F. S. Tham, B. Donnadieu, R. C. Haddon, ***Journal of the American Chemical Society*****,** (2010), 132, 17258-17264.

**14**) "Methoxy-substituted phenalenyl-based neutral radical molecular conductor" **A. Sarkar**, S. K. Pal, M. E. Itkis, P. Liao, F. S. Tham, B. Donnadieu, R. C. Haddon, ***Chemistry of Materials***, (2009), 21, 2226–2237.

**15**) "Calix[4]arene bisphosphite ligands bearing two distal 2,2'-biphenyldioxy or 2,2'- binaphthyldioxy moieties: conformational flexibility and allyl–palladium complexes" **A. Sarkar**, S. S. Krishnamurthy, M. Nethaji, ***Tetrahedron***, (2009), 65, 374-382.

**16**) "Localization of Spin and Charge in Phenalenyl-Based Neutral Radical Conductors" R. C. Haddon, **A. Sarkar**, S. K. Pal, X. Chi, M. E. Itkis, F. S. Tham, ***Journal of the American Chemical Society***, (2008), 130, 13683-13690.

**17**) "Phosphite ligands derived from distally and proximally substituted dipropyloxy calix[4]arenes and their palladium complexes: Solution dynamics, solid-state structures and catalysis" **A. Sarkar**, M. Nethaji, S. S. Krishnamurthy, ***Journal of Organometallic Chemistry*** (2008), 693, 2097-2110.

**18**) "Structure and solution dynamics of a "P-N-P" ligand attached to calix[4]arene scaffold and its palladium dichloride complex" **A. Sarkar**, M. Nethaji, S. S. Krishnamurthy, *Polyhedron* (2007), 26, 3904-3910.

**……..**

## LIST OF PATENTS (from the projects as project lead)

**Granted**:

**1)** Lipid-based Platinum N-Heterocyclic carbene compounds and nanoparticles. (Patent No 10,017,531, issued on 10 July 2018)

**2)** Lipid based platinum compounds and nano-particles. (Patent No 10,081,648, issued on 25 September 2018)
(Divisional application: Patent No 10,730,899, issued on 4 August 2020).

**3)** Process for preparing supramolecular platinum-based compounds. (A patent has been granted in Europe, Granted Application Number 16731968.0)

**4)** Crystalline Platinum Compounds. (A patent has been granted in the US, Patent No 10,800,801, issued on 13th October 2018)

**Filed:**

**5)** Preparation of fluorescent anticancer platinum drugs, WO2017064657(Filed on 2016)

## REFERENCES

Please go through my Linkedin profile for references.
https://www.linkedin.com/in/arindam-sarkar-ba30591a/
Further references can be provided upon request.