

# Bio-data

## Personal Data

**Name:** SOMNATH KARMAKAR

**Date of Birth:** May11, 1986

**Nationality:** Indian

**Sex:** Male

**Current Academic Position: a) Designation:** Assistant Professor (Stage III)

**b) Affiliation:** Department of Chemistry, Raghunathpur College, Purulia  
Pin-723 133, West Bengal, India.

**Contacts: E-mail:** [skarmakarbu@gmail.com](mailto:skarmakarbu@gmail.com), [skarmakarbu@rediffmail.com](mailto:skarmakarbu@rediffmail.com)

**Phone No:** +91-9474494960 (M), **WhatsApp:** +91-7384945878

## Academic Qualifications

Name of Examination passed	Name of Board/Council/University/Institute	Division/Classes	Rank	Year of passing	% of marks obtained	Subject(s) taken
Madhyamik Pariksha	West Bengal Board of Secondary Education	1 <sup>st</sup>	-	2001	86%	Bengali, English, Mathematics, Physical. Sc., Life sc, History, Geography
Higher Secondary	West Bengal Council of Higher Secondary Education	1 <sup>st</sup>	-	2003	81.20%	Bengali, English, Mathematics, Physics, Chemistry, Biology
B. Sc. Three-Year Honours Degree Course	The University of Burdwan	1 <sup>st</sup>	1 <sup>st</sup>	2006	78.625%	Chemistry(H), Mathematics(Gen), Physics(Gen), Bengali(compulsory), English(compulsory), ENVIS(compulsory)
M. Sc.	The University of Burdwan	1 <sup>st</sup>	1 <sup>st</sup>	2008	87.75%	Chemistry (Special Paper: <b>Physical Chemistry</b> )
Joint CSIR-UGC Test for JRF and Eligibility for Lectureship (NET)	Joint CSIR-UGC	-	-	Held on 23 <sup>rd</sup> December, 2007	Junior Research Fellowship and eligible for Lectureship (JRF-LS)	Chemical Sciences
GATE	Department of Secondary and Higher Education, Ministry of Human Resource Development, Govt. of India	-	All India Rank: 41	Held on 10 <sup>th</sup> February, 2008	99.32 Percentile	CY- Chemistry
Ph.D.	The University of Burdwan	-	-	13 <sup>th</sup> December 2016	-	Chemistry

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### Award, Medal, Prize and Fellowship

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- Obtained the 'D.P.I. Special Stipend Scheme, Sl. No. in Merit List 2036 MP-2001-2002' (Memo No. 1876(30)-SS dated 29.03.2007) for the B.Sc. 1<sup>st</sup>, 2<sup>nd</sup>, 3<sup>rd</sup> year.
- Obtained the 'W.B. Govt. Merit-Cum-Means Scholarship, 2006' (Memo No. 80(23)Gen/SS, Sl. No. in Merit List 64, dated 27.06.2007) from the Director of Public Instruction (Scholarship & Stipend), Education Directorate, Government of West Bengal for performance at under-graduate level.
- Obtained the 'Post-Graduate Merit Scholarship for University Rank Holder (2006-08)' (Memo No. F.5-10/2007(SA-III), dated 29 March 2008) from the Ministry of Human Resource Development, Government of India (University Grants Commission, Bahadur Shah Zafar Marg, New Delhi-110002) for outstanding performance at under-graduate level (Rank: 1st) for pursuing post-graduate studies.
- Won the 'University Gold Medal' having been placed first in the first class in the M.Sc. examination 2008 in Chemistry from the University of Burdwan.
- Won the Gourikanta Mukherjee Memorial Gold Medal' having secured highest percentage of marks in the M.Sc. examination 2008 in Chemistry from the University of Burdwan.
- Won the 'Tarunendra Bose Gold Medal' having secured highest percentage of marks in the M.Sc. examination 2008 in science group from the University of Burdwan.
- Won the 'Raimoni & Bhudhar Samanta G.P. Silver Medal' having secured highest percentage of marks in the M.Sc. examination 2008 in science group from the University of Burdwan.
- Won the 'Dr. Panchanan Roy & Late Surendra Kumar Roy Prize' having secured highest percentage of marks in the M.Sc. examination 2008 in science group from the University of Burdwan.
- Junior Research Fellowship under CSIR Scheme from Council of Scientific and Industrial Research, Govt. of India in 2007 (December).
- Secured 3<sup>rd</sup> position in poster presentation in the national level seminar entitled 'Design, Synthesis, Interactions, Chemical and Biochemical Activities of Different Functional Molecule' organized by the University of Burdwan, Burdwan, W.B. (04-06 February 2016).
- Selected best oral presenter in the state level seminar on 'A Scientific, Social & Economic Impact on Environment: Awareness, Benefits & Limitations' organized by Raghunathpur College, Purulia (10<sup>th</sup> January 2017).

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### Research Experience

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**Title of the thesis:** Study on some  $\pi$ -conjugated molecules and reaction networks in the light of graph theory  
**Supervisor:** Dr. Bholanath Mandal, Professor, Department of Chemistry, The University of Burdwan, Burdwan, West Bengal.

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### Area of Research Interest

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Theoretical chemistry that concerns the application of Graph Theory

- to investigate the stability, reactivity and MOs of some  $\pi$ -conjugated molecular systems
  - to deal with problems involving reaction networks
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**Research Papers Published in Journals**

Sl. No.	Title with Page Nos.	Journal, Publishing house	ISSN/ ISBN No.	Whether peer reviewed. Impact Factor, if any	No. of Co-authors	Whether you are the main author
1	<b>Graph Theoretical Solutions for the Coupled Kinetic Rate Equations</b> , (accepted, DOI:10.1021/jp4109865) (2014, <b>118</b> , 1155-1161)	<i>J. Phys. Chem A, ACS Publications</i>	ISSN:1089-5639(print) 1520-5215(web)	Peer reviewed <b>(2.900)</b>	1	Yes
2	<b>Graph Theoretical Analysis on the Kinetic Rate Equations of Linear Chain and Cyclic Reaction Networks</b> (accepted, DOI: 10.1021/jp504722q), (2014, <b>118</b> , 7672-7682)	<i>J. Phys. Chem A, ACS Publications</i>	ISSN: 1089-5639(print) 1520-5215(web)	Peer reviewed <b>(2.900)</b>	1	Yes
3	<b>Eigensolutions of Cyclopolyacene Graphs</b> , (accepted, DOI: 10.1080/00268976.2014.971898) (2015, <b>113</b> , 07, 719-726).	<i>Molecular Physics Taylor &amp; Francis</i>	ISSN: 0026-8976 (Print), 1362-3028 (Online)	Peer reviewed <b>(1.962)</b>	2	Yes
4	<b>Eigensolutions of Dodecahedron Graphs</b> , (accepted, DOI:10.1016/j.cplett.2014.01.020) (2014, <b>594</b> , 41-46)	<i>Chem. Phys. Lett., ELSEVIER</i>	ISSN: 0009-2614	Peer reviewed <b>(2.800)</b>	2	No
5	<b>Cardinalities of Poly(p-Phenylene) Graphs</b> (accepted, DOI:10.1080/00268976.2014.901571) ( 2014, <b>112</b> , 20, 2646-2653)	<i>Molecular Physics Taylor &amp; Francis</i>	ISSN: 0026-8976 (Print), 1362-3028 (Online)	Peer reviewed <b>(1.962)</b>	2	No
6	<b>Schematic generation of characteristic polynomials and the Hosoya indices of mono- and di-substituted polymer graphs of linear chains and cycles</b> , (March 2014, <b>91</b> , 503-515)	<i>J. Indian Chem. Soc., Indian Chemical Society</i>	ISSN: 0019-4522	Peer reviewed <b>(0.243)</b>	3	No
7	<b>Matrix product forms for the characteristic polynomial coefficients of poly(p-phenylene) graphs</b> (December 2014, <b>91</b> , 2197-2210).	<i>J. Indian Chem. Soc., Indian Chemical Society</i>	ISSN: 0019-4522	Peer reviewed <b>(0.243)</b>	2	No
8	<b>Symmetry-adapted linear combinations for the eigenvalues and eigenvectors of reciprocal graphs</b> (DOI: 10.1080/00268976.2016.1229872) (2016, <b>114</b> , 22, 3307-3318)	<i>Molecular Physics Taylor &amp; Francis</i>	ISSN: 0026-8976 (Print), 1362-3028 (Online)	Peer reviewed <b>(1.962)</b>	3	No
9	<b>{X,Y}-cyclacene graphs with next nearest neighbor interactions</b> (DOI: 10.1080/10406638.2017.1293699) (March 2017)	<i>Polycyclic Aromatic Compounds, Taylor &amp; Francis</i>	ISSN: 1040-6638 (Print), 1563-5333 (Online)	Peer reviewed <b>(2.195)</b>	1	Yes
10	<b>Graph Theory in Chemistry: A Brief Review</b> (DOI: 10.54280/jse.222103) (June 2022, <b>2</b> , 18-25)	<i>Journal of Scientific Enquiry, Sidho-Kanho-Birsha</i>	ISSN: 2583-2352	Peer reviewed	Nil	Yes

		<b>University, WB, India</b>				
<b>11</b>	<b>Graph symmetry and eigensolutions: A brief review</b> (DOI: 10.1016/j.jics.2022.100696) (September 2022, <b>99</b> , 100696)	<i>J. Indian Chem. Soc.,</i> <b>Indian Chemical Society</b>	ISSN: 0019-4522	<b>Peer reviewed (0.243)</b>	Nil	<b>Yes</b>
<b>12</b>	<b>Graph theoretical procedures for determination of eigenspectra of molecular graphs: A brief review</b> (DOI: 10.1016/j.jics.2023.100968) (March 2023, <b>100</b> , 100968)	<i>J. Indian Chem. Soc.,</i> <b>Indian Chemical Society</b>	ISSN: 0019-4522	<b>Peer reviewed (0.243)</b>	Nil	<b>Yes</b>
<b>13</b>	<b>Surface Covering with Regular Polygons: A Brief Discussion</b> (DOI: 10.54280/jse.233111) (June 2023, <b>3(1)</b> , 60-65)	<i>Journal of Scientific Enquiry,</i> <b>Sidho-Kanho-Birsha University, WB, India</b>	ISSN: 2583-2352	<b>Peer reviewed</b>	Nil	<b>Yes</b>

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### Employment Details & Teaching Experience

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<b>Name of the post</b>	<b>Institution where employed</b>	<b>Permanent or temporary or contract basis</b>	<b>Date of joining (exact date)</b>	<b>Date of leaving (exact date)</b>
Assistant Teacher	Kulti High School(H. S.), Kulti, Burdwan, 713343	Permanent	22.09.2008	06.04.2010
Assistant Professor	Raghunathpur College, Raghunathpur, Purulia, 723133	Permanent	<b>07.04.2010</b>	Continuing

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### Training Course Attended (UGC HRDC)

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<b>Sl. No.</b>	<b>Programme</b>	<b>Duration</b>	<b>Organised by</b>
1	92 <sup>nd</sup> Orientation Programme	06.09.2013-03.10.2013	UGC-ASC, The University of Burdwan
2	1 <sup>st</sup> refresher Course in Biological sciences	10.10.2014-30.10.2014	UGC-ASC, The University of Burdwan
3	Refresher Course on Nanoscience & Nano Technology And Its Applications (Interdisciplinary)	15.02.2021-27.02.2021	Human Resource Development Centre, Guru Ghasidas Vishwavidyalaya, Bilaspur (C.G.) India-495009

**Poster/Oral Presentation in Seminar/Conference**

Sl. No.	Title of the Paper Presented	Title of the Conference/Seminar	Organized by	Whether international/national/state level	Period (held on)
1 (Poster)	Graph Theoretical Eigensolution of [20]Fullerene	Recent Developments in Research in Chemistry	West Bengal State University, Barasat, Kolkata, WB	National Level Seminar	23 <sup>rd</sup> November 2013
2 (Poster)	Graph Theoretical Eigenvalues of Cyclopolyacene Graphs	Recent Advances in Chemistry & Industry (2014)	Indian Chemical Society APC Road, Kolkata, WB	National Level Symposium	01 <sup>st</sup> -02 <sup>nd</sup> August 2014
3 (Poster)	Determination of Total $\pi$ -Electron Energy & HOMO-LUMO Gap in Cyclopolyacene Molecule: A Graph Theoretical Approach	Recent Progress in Chemistry-2014	Sidho-Kanho-Birsha University, Purulia, WB	State Level Seminar	13 <sup>th</sup> August 2014
4 (Poster)	Solutions for the Multistep Coupled Kinetic Rate Equations : A Graph Theoretical Approach	Chemistry for Better Tomorrow-Current trends and Opportunity	Sidho-Kanho-Birsha University, Purulia, WB	National Level Conference	2 <sup>nd</sup> – 3 <sup>rd</sup> December 2014
5 (Poster)	Determination of Analytical Expression of the Eigenvalues of Dodecahedron Graph	Modern Chemistry: An Interdisciplinary Science	Nistarini College, Purulia, WB	National Level Conference	19 <sup>th</sup> January 2015
6 (Poster)	Graph Theoretical Determination of the Concentrations of the Species Involved in Multistep Reactions	Advanced Spectroscopy, Theoretical Chemistry, Synthesis, Reactivity and Structural Evaluation	The University of Burdwan	National Level Seminar	19 <sup>th</sup> – 21 <sup>st</sup> February 2015
7 (Poster)	Determination of analytical expression of $\pi$ -MO energy eigenvalues of cyclopolyacene molecules considering next-neighbour interactions	Chemistry for Better Tomorrow – Disarmament and Peaceful Uses of Chemistry	Sidho-Kanho-Birsha University, Purulia, WB	National Level Seminar	15 <sup>th</sup> December 2015
8 (Poster)	Eigensolutions of cyclopolyacene graphs with next nearest neighbor interactions	Design, Synthesis, Interactions, Chemical and Biochemical Activities of Different Functional Molecules	The University of Burdwan	National Level Seminar	04-06 February 2016
9 (Poster)	Graph theoretical determination of $\pi$ -MO energy eigenvalues of [20]fullerene	Chemistry: An Innovation Driver in Materials Science	Raghunathpur College	National Level Science Academies' Lecture Workshop	27-28 September 2016
10 (Poster)	Graph theoretical determination of $\pi$ -MO energy eigenvalues and total $\pi$ -electron energies of cyclopolyacene molecules considering presence and absence of nnn interactions	Recent Advances in Chemistry for Better Tomorrow (RACBT-2016)	Kashipur MM Mahavidyalaya, Kashipur, Purulia	National Conference	24-25 November 2016

11 (Oral)	Removal or Detoxification of Heavy Metals from Living System	A Scientific, Social & Economic Impact on Environment: Awareness, Benefits & Limitations	Raghunathpur College	State Level Seminar	10 <sup>th</sup> January 2017
12 (poster)	Determination of Total $\pi$ -Electron Energy & HOMO-LUMO Gap in Cyclacene Molecule: A Graph Theoretical Approach	Science: Past, Present & Future	Syamsunder College, Purba Burdwan	International Level Seminar	12 <sup>th</sup> December 2017
13 (Oral)	Graph Theoretical Eigen solutions of Cyclopolycacene Graphs	Importance of Chemistry in Biological Sciences	Sidho-Kanho-Birsha University	National level Webinar	25 <sup>th</sup> August 2021
14 (Oral)	Solutions for Simple Kinetic Rate Equations: A Graph Theoretical Approach	Contribution of Chemistry to the Well-being of Mankind	Raghunathpur College	National level Seminar	24 <sup>th</sup> September 2022

- **Participation in the workshop on framing of semester based UG syllabi as per choice based credit system(CBCS) organized by Sidho Kanho Birsha University, Purulia on 24.03.2017**

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