

## Dr. Baibaswata Bhattacharjee

M.Sc., Ph.D. NSC Fellow, Taiwan

Associate Professor

Department of Physics

Ramananda College, Bishnupur

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### AREAS OF INTEREST/SPECIALISATION

- Semiconductor nanomaterials,
- Thin films,
- Biomedical applications of nanomaterials,
- Nanotoxicity

### ACADEMIC ACHIEVEMENTS

- Received the national scholarship for talented children (rural areas-class VIII) sponsored by the Government of West Bengal, INDIA, 1988.
- Received the National Merit Scholarship, 1991
- Received the Dooars Branch Indian Tea Association (DBITA) meritorious students' award for securing second position amongst the successful students in the Higher Secondary Examination in the district of Jalpaiguri, 1993.
- Qualified in the National Eligibility Test (NET), a National Level Test for eligibility to Lectureship/Fellowship in the Colleges/Universities of India.
- Selected for the Junior Research Fellowship, sponsored by the Indian Association for the Cultivation of Science (IACS), June 2000 - June 2002.
- Received the **best paper award** in the Physical and Materials Science session for presenting the paper "Structural properties of nanocrystalline ZnS films prepared by high pressure d. c. magnetron sputtering" at the 24th annual conference of EMSI on electron microscopy and allied fields held at Panjab University, Chandigarh during February 9-11, 2001
- Received the **best paper award** in the Environmental Biotechnology & Microbiology session for presenting the paper "Changing physico-chemical properties of water due to exposure of ZnS nanoparticles and its detrimental effect on feeding behaviour and liver histometry of a non-air breathing catfish *Mystus vittatus*" at the 10th National Conference on Environmental Issues and Food Security in India held at Kennedy Hall, Institute of Jute Technology, Kolkata, India, on August 10, 2014.
- Received the **best poster award** for the paper "ZnS nanoparticles affects hazardously the process of oogenesis in the dwarf striped catfish *Mystus vittatus* (Bloch, 1794)" at the 1st International Conference on "Emerging Materials: Characterization & Application" held at Central Glass & Ceramic Research Institute, Kolkata, India during December 4-6, 2014.
- Received the "**Environmentalist of the year award (2014)**" recommended by the search committee constituted by Scientific and environmental research institute, Kolkata; Foundation for science and environment, Kolkata and Confederation of

Indian universities, New Delhi, on the occasion of World Environment Day 2015, at the Rajabazar Science College, The University of Calcutta, on June 5, 2015.

- Received the **outstanding paper award** for the paper “Alterations in metabolic and haematological parameters in an Indian minor carp *Labeo bata* (Hamilton, 1822) under the exposure of ZnS nanoparticles” presented at the First Regional Science Congress (Burdwan Division) held Bankura Christian College, Bankura, during November 7-8, 2016.
- Received the **best oral presentation award** for the paper “The simultaneous role of thyroid and pituitary hormones in regulating the reproductive phases of female *Mystus vittatus*: A histometric approach” presented at the Second Regional Science Congress (Western Region) held at The University of Burdwan, Burdwan, during November 16-17, 2017.
- Received the **“Indo Global Excellence Award (2018)”** for contribution in the field of Environmental Science & Nanophysics, chosen by the search committee constituted by Indo global chamber of commerce, Industries and Agriculture (IGCCIA), Pune, at the St. Xaviers’ College, Ranchi, on February 22, 2018.
- Received the award for the **best oral presentation** in Biotechnology session for presenting the paper “Hazardous effect of engineered ZnS nanoparticles on aquatic biota” at the International Conference on Advances in environmental and agricultural biotechnology-2018, held at St. Xaviers’ College, Ranchi, India, during February 22-24, 2018.
- Received the award for the **best oral presentation** in Life Science session for the paper “Thyroid and pituitary hormones....of female *Mystus vittatus*: a histometric approach for combating protein deficiency in rural India” at the International Conference on Advances in environmental and agricultural biotechnology-2018, held at St. Xaviers’ College, Ranchi, India, during February 22-24, 2018.
- Received the **outstanding paper award** for the paper “The simultaneous role of thyroid and pituitary hormones in regulating the reproductive phases of female *Mystus vittatus*: A histometric approach” presented at the 25<sup>th</sup> West Bengal State Science and Technology Congress held at The Science city auditorium, Kolkata, India, during March 3- 4, 2018.
- Received the **“World Ecological Restoration Award 2018”** recommended by the search committee constituted by International Benevolent Research Foundation (IBRF), Kolkata, Confederation of Indian universities (CIU), New Delhi and World Achievers Foundation, Kolkata on the occasion of 2<sup>nd</sup> World Clean Environment Summit held during July 16-18, 2018 at the Science City Auditorium, Kolkata, West Bengal.
- Received the **outstanding paper award** in Physics for oral presentation of the paper “Use of ZnO nanoparticles as dietary supplements alters the reproductive performance of male Brooders in *Labeo bata* (Hamilton, 1822)” presented at the Third Regional Science Congress (Western Region) held at The Sidho-Kanho-Birsha University, Purulia, during December 20-21, 2018.
- Received the **outstanding paper award** in Physics for oral presentation of the paper “Use of ZnO nanoparticles as dietary supplements alters the reproductive performance of male Brooders in *Labeo bata* (Hamilton, 1822)” presented at the 26<sup>th</sup> West Bengal

State Science and Technology Congress held at The Science city auditorium, Kolkata, India, during February 28-March 1, 2019.

- Received the “**INSC Research Excellence Award (2019)**” for contribution in the field of Physics (Nano science & Applications), chosen by the search committee constituted by Institute of Scholars, Bengaluru.
- Successfully completed the “online certificate course on Research Methodology”, organized by International Benevolent Research Foundation, Kolkata, India, during May 11-20, 2020.
- Received the award for the **best paper** for the paper “All optical encoded Fredkin Gate using reflecting semiconductor optical amplifier with simulative verification” at the International Virtual Conference on Applied Science, Technology Management and Language Studies (ASTMLS-2020), organized by Sona College of Technology, Salem, Tamil Nadu, India, during December 11-12, 2020.

### RESEARCH EXPERIENCE

From	To	Name and Address of Company / Organization	Position held
January 2000	June 2002	Indian Association for the Cultivation of Science (IACS)	Junior Research Fellow (JRF)
July 2002	December 2004	Ramananda College)	Part time Research Fellow at IACS
January 2005	June 2006	National Taiwan University Taipei, Taiwan	Post doctorate research fellow (at study leave from RNC)
July 2006	Till date	Ramananda College	Teaching Faculty

### ACADEMIC EXPERIENCE

- Teaching Physics (UG Honours & General Course) at Ramananda College, Bishnupur since 2002, Served as Head of The Department of Physics, Ramananda College for Two Years (From July, 2010 To June, 2012).
- Examiner/Convenor of B.A./B.Sc. Honours & General Course Examinations (Theoretical & Practical) in Physics conducted By The University of Burdwan for more than fourteen years, Served as paper setter for Vidyasagar University and paper setter and moderator of Bankura University.
- Acted as the convener of the UG syllabus committee in Physics for CBCS curriculum under Bankura University.
- Referee of the journal “Journal of American Ceramic Society”
- Referee of the journal “Journal of Alloys and Compounds”
- Referee of the journal “Journal of Experimental Nanoscience”
- Referee of the journal “Journal of Electrochemical Society”
- Referee of the journal “Sindh University Journal”
- Referee of the journal “Journal of Materials Science: Materials in Electronics”
- Referee of the journal “Egyptian Journal of Aquatic Research”
- Referee of the journal “Journal of Nanotechnology”

- Acted as the Joint Editor of the “Proceedings of the UGC sponsored National Level Seminar on Characterization of Nanomaterials” (ISBN: 978-81-933848-0-0). The seminar was held during September 22-23, 2016, Organized by Department of Physics, Ramananda College, Bishnupur, West Bengal, India.
- Acting as Editor-in-chief of the journal “Frontiers in Multidisciplinary Research”, published by Ramananda College, Bishnupur, West Bengal, India.

### **ADMINISTRATIVE EXPERIENCE**

- Acted as the College Coordinator in the programme “Enjoy the excitements in PHYSICS, Come and learn PHYSICS” hosted by the Department of Physics, Ramananda College during September 6-9, 2006 in association with IAPT-Midnapore College Centre for Scientific Culture as a part of a nationwide program undertaken by NCSTC-Network and supported by RVPSP, New Delhi, for the students of classes XI and XII.
- Acted as the Joint Convenor in the UGC sponsored First State Level Seminar on “Recent Advances in Materials Science” held at Ramananda College, Bishnupur, India, during 27-28 March, 2008.
- Acted as the Joint Convenor in the UGC sponsored State Level Seminar on “Nanomaterials: synthesis and applications” held at Ramananda College, Bishnupur, India on September 8, 2010.
- Acted as the Joint Organizing Secretary in the UGC sponsored National Level Seminar on “Emerging Trends in Biophysical Researches” held at Ramananda College, Bishnupur, India during September 12-13, 2011.
- Acted as the Quiz Coordinator in the Diamond Jubilee celebration of UGC in Ramananda College on January 8, 2014.
- Acted as the Joint Organizing Secretary in the two day Science camp on “Learning by Doing: Science Mysteries Demystified” at Ramananda College, Bishnupur, Bankura during January 8-9, 2014, Sponsored by CARE, Saha Institute of Nuclear Physics, Kolkata and Department of Science & Technology, WB, Kolkata.
- Acted as the Acting President of the organizing committee in the UGC sponsored National level seminar on “Introductory Astronomy & Astrophysics” held at Ramananda College, Bishnupur, India during November 26-27, 2014.
- Acted as the Assistant Officer-in-Charge for the part II final examination of Burdwan University during July-August 2015.
- Acted as the Joint Convenor in the UGC sponsored National Level Seminar on “Characterization of Nanomaterials” held at Ramananda College, Bishnupur, India during September 22-23, 2016.
- Acted as the Joint Convenor of the UGC sub-committee, Ramananda College, Bishnupur, Bankura, in the XIth plan period (April, 2007-March, 2012) and in XIIth plan period (January 2017-till date).
- Acted as the Coordinator of the Career & Counselling Cell, Ramananda College, Bishnupur, Bankura (01.05.2010-30.06.2016).
- Acted as a member of the Governing Body (University Nominee) of Sonamukhi College, Sonamukhi, Bankura (1.5.2013-28.02.2017).
- Acted as a member of the editorial board (01.07.2014-30.06.2016) for the journals published by Social Research Foundation, Kanpur, India.

- Acted as the Venue Supervisor at Ramananda College (Centre name: - Bishnupur, code: 31, venue code:56) for the Examination to recruit Forest Guard under Directorate of Forests-2017 on 08.09.2017.
- Acted as judge in music competition and participated actively in organizing the annual cultural programme 2018 of Ramananda College.
- Acted as the college coordinator for the outreach programme in pure science, organized by IQAC, Ramananda College, Bishnupur on 25.04.2019.

## **PUBLICATIONS**

### **(Journals/Proceedings/Chapter in Books)**

#### **2019**

- 1) Constrained growth of the aquarium fish Black Molly, *Poecilia sphenops* (Valenciennes, 1846), under the exposure of ZnS nanoparticles, B. Bhattacharjee and N. Chatterjee, *Materials today Proceedings*, **11(2)** (2019) 879-888

#### **2018**

- 1) ZnS nanoparticles persuade alterations in metabolic and haematological aspects in the cyprinid *Labeo bata* (Hamilton, 1822), N. Chatterjee and **B. Bhattacharjee**, *Journal of Applied Biology & Biotechnology*, **6(2)** (2018) 6-14.
- 2) A comparative survey on the harmful effect of ZnS nanoparticles between two economically important fish species *Labeo bata* (Hamilton, 1822) and *Mystus vittatus* (Bloch, 1794), **B. Bhattacharjee** and N. Chatterjee, *Sustainable Management of Aquatic Resources, Part-II*, pp 619-635, (ISBN: 978-93-87590-11-3) Eds. B.K. Mahapatra, A.K. Roy and N.C. Pramanik, Narendra Publishing House, Delhi, India.
- 3) Some Important Physicochemical Properties of the Water of “Lalbandh”, Bishnupur, Bankura: Search for a Correlation with the Surrounding Environments, N. Chatterjee and **B. Bhattacharjee**, *International journal of basic and applied research*, **8(12)** (2018) 637-640.
- 4) Probe on the synchronized actions of Pituitary (GTH and TSH) and Thyroid hormones in controlling the seasonal reproductive cycle of female Asian striped catfish *Mystus vittatus* (Bloch, 1794), N. Chatterjee and **B. Bhattacharjee**, *Asian Resonance* **7(4)** (2018) 56-62.

#### **2017**

- 1) Disquieting effect of ZnS nanoparticle on an Indian minor carp, *Labeo bata* (Hamilton, 1822) and the Asian dwarf striped catfish *Mystus vittatus* (Bloch, 1794) with respect to some of their vital organs: A comparative study, N. Chatterjee and **B. Bhattacharjee**, *International Journal of Advanced Research*, **5 (12)** (2017) 1599-1611.

#### **2016**

- 1) Perilous Effect of ZnS Nanoparticles on Testicular cell development and sperm morphology in the Asian striped catfish *Mystus vittatus* (Bloch, 1794), **B. Bhattacharjee** and N. Chatterjee, *Advanced Science Letters*, **22 (1)** (2016) 64-70.

- 2) ZnS nanoparticles affect hazardously the process of oogenesis in the dwarf Asian striped catfish *Mystus vittatus* (Bloch, 1794), N. Chatterjee and **B. Bhattacharjee**, *Advanced Science Letters* **22** (1) (2016) 126-131.
- 3) Revelation of ZnS nanoparticles induce follicular atresia and apoptosis in the ovarian preovulatory follicles in the catfish *Mystus tengara* (Hamilton, 1822), N. Chatterjee and **B. Bhattacharjee**, *Scientifica*, Volume 2016, Article ID 3927340, 7 pages.
- 4) ZnS nanoparticle induced hypoxia affects the liver characteristics and haematological parameters of a non-air breathing catfish *Mystus vittatus* (Bloch, 1794), N. Chatterjee and **B. Bhattacharjee**, Proceedings of the UGC sponsored National Level Seminar on “Characterization of Nanomaterials” (September 22-23, 2016), p-81-98. Eds. B. Bhattacharjee and A. Bandyopadhyay, Ramananda College, 2016. (ISBN: 978-81-933848-0-0).

#### 2015

- 1) An analytic contemplation on the conspicuous vicissitudes in the histomorphology of corpuscles of Stannius of a fresh water catfish *Mystus tengara* (Hamilton, 1822) due to the exposure of ZnS nanoparticles, N. Chatterjee and B. Bhattacharjee, *Scientifica*, Volume 2015, Article ID 697053, 7 pages.
- 2) Salient alterations in hepatic and renal histomorphology of an Indian minor carp, *Labeo bata* (Hamilton, 1822) owing to ZnS nanoparticle induced hypoxia and environmental acidification, N. Chatterjee and **B. Bhattacharjee**, *The International Journal of Earth & Environmental Sciences*, **1**(1) (2015) 1-9.

#### 2014

- 1) Hazardous effect of ZnS nanoparticles on the feeding behaviour, growth and maturation process of the Asian striped catfish, *Mystus vittatus* (Bloch, 1794), *International Aquatic Research* **6** (2014) 71-82.
- 2) Changing physicochemical properties of water due to exposure of ZnS nanoparticles and its detrimental effect on feeding behaviour and liver of a non-air breathing catfish *Mystus vittatus*, N. Chatterjee and **B. Bhattacharjee**, *International Journal of Latest Research in Science and Technology* **3**(4) (2014)199-204.
- 3) Oocyte developmental stages and its relationship with the zona layers during vitellogenesis in the Asian striped catfish *Mystus vittatus* (Bloch, 1794), N. Chatterjee and **B. Bhattacharjee**, *Journal of Applied Biology & Biotechnology* **2**(4) (2014) 1-6.
- 4) Abundance and diversity of zooplankton and its seasonal variation in the water of Saheb bandh, Purulia, India: A quantitative study, N. Chatterjee, M. Mukherjee and **B. Bhattacharjee**, *The International Journal of Science & Technoledge* **2**(12) (2014) 22-28.
- 5) Quantitative study on the impact of the seasonal change in the aquatic physicochemical parameters on zooplankton population density in “Saheb bandh”,

Purulia, West Bengal, India, N. Chatterjee, **B. Bhattacharjee**, *Discovery Nature*, **9(19)** (2015) 11-19.

### 2013

- 1) Harmful impact of ZnS nanoparticles on *Daphnia sp.* in the western part (districts of Bankura and Purulia) of West Bengal, India, **B. Bhattacharjee**, N. Chatterjee and C.-H. Lu, *ISRN Nanomaterials*, Volume 2013, Article ID 207239, 7 pages.
- 2) General health of the villagers in the western part of the West Bengal, India, with a special reference of Ainch Bari, Bishnupur, Bankura, N. Chatterjee and **B. Bhattacharjee**, *Periodic Research* **2** (2013) 19-23.

### 2011

- 1) Effect of Microwave power on the physical properties of carboxylic acid coated manganese-ion doped zinc sulfide nanoparticles, **B. Bhattacharjee** and C. -H. Lu, *Journal of Nanotechnology*, Volume 2011, Article ID 916750, 7 pages.

### 2010

- 1) Aging behaviour of CdSe nanoparticles: effect of stoichiometry on changing physical properties, **B. Bhattacharjee**, C. -H. Hsu, C. -H. Lu and R. C. Ruaan, *Chalcogenide Letters* **7** (2010) 71-80.

### 2009

- 1) Microwave synthesis of manganese-ion-doped zinc sulfide nano-phosphors using a novel monomer, C.-H. Lu, **B. Bhattacharjee** and S.-Y. Chen, *Journal of Alloys and Compounds* **475** (2009) 116-121.

### 2007

- 1) Strong excitonic confinement effect in ZnS and ZnS:Mn nanorods embedded in polycarbonate membrane pores, S. K. Mandal, A.R. Mandal, S. Das and **B. Bhattercherjee**, *Journal of Applied Physics* **101** (2007) 114315.

### 2006

- 1) Multicolor luminescence of undoped ZnS nanocrystalline thin films at room temperature, **B. Bhattacharjee** and C. H. Lu, *Thin Solid Films* **514** (2006) 132-137.
- 2) Colloidal CdSe-ZnS core-shell nanoparticles: dependence of physical properties on initial Cd to Se concentration, **B. Bhattacharjee**, C.-H. Hsu, C.-H. Lu and W. H. Chang, *Physica E-Low dimensional systems and nanostructures* **33** (2006) 388-393.
- 3) Highly Luminescent CdSe Nanoparticles Embedded in Silica Thin Films, C. -H. Lu, **B. Bhattacharjee**, C. -H. Hsu, S. -Y. Chen, R. -C. Ruaan and W. H. Chang, *Journal of Electroceramics* **17** (2006) 19-27.
- 4) Reflectance and photoluminescence spectra of as grown and hydrogen and nitrogen incorporated tetrahedral amorphous carbon films deposited using an S bend filtered cathodic vacuum arc process, O.S. Panwar, Mohd. Alim Khan, **B. Bhattacharjee**, A.K. Pal, B.S. Satyanarayana, P.N. Dixit, R. Bhattacharyya and M.Y. Khan, *Thin Solid Films* **515** (2006) 1597-1606.
- 5) Sol-Gel preparation and luminescence properties of BaMgAl<sub>10</sub>O<sub>17</sub>:Eu<sup>2+</sup> phosphors, C.-H. Lu, C.-T. Chen and **B. Bhattacharjee**, *Journal of Rare Earths* **24** (2006) 706-711.

## 2003

- 1) Studies on CdS nanoparticles dispersed in silica matrix prepared by sol-gel Technique, **B. Bhattacharjee**, S. K. Bera, D. Ganguli, S. Chaudhuri and A. K. Pal, *European Physical Journal B* 31 (2003) 3-9.

## 2002

- 1) Luminescent CdS nanoparticles embedded in polyethylene glycol (PEG 300) matrix in thin film form, **B. Bhattacharjee**, D. Ganguli and S. Chaudhuri, *Journal of Nanoparticle Research* 4 (2002) 225-230.
- 2) Synthesis and characterization of sol-gel derived ZnS:Mn<sup>2+</sup> nanocrystallites embedded in a silica matrix, **B. Bhattacharjee**, D. Ganguli, K. Iakoubovskii, A. Stesmans and S. Chaudhuri, *Bulletin of Materials Science* 25 (2002) 175-180.
- 3) Optical properties of Cd<sub>1-x</sub>Zn<sub>x</sub>S nanocrystallites in sol-gel silica matrix, **B. Bhattacharjee**, S.K. Mandal, K. Chakrabarti, D. Ganguli and S. Chaudhuri, *Journal of Physics D: Applied Physics* 35 (2002) 2636-2642.
- 4) ZnS:Mn nanocrystallites in SiO<sub>2</sub> matrix: Preparation and properties, **B. Bhattacharjee**, D. Ganguli, S. Chaudhuri and A. K. Pal *Thin Solid Films* 422 (2002) 98-103.
- 5) Growth behaviour of CdS nanoparticles embedded in polymer and sol-gel silica matrices: relationship with surface state related luminescence, **B. Bhattacharjee**, D. Ganguli and S. Chaudhuri, *Journal of Fluorescence* 12 (2002) 369-375.
- 6) Synthesis and optical characterization of sol-gel derived zinc sulphide nanoparticles confined in amorphous silica thin films, **B. Bhattacharjee**, D. Ganguli, S. Chaudhuri and A. K. Pal, *Materials Chemistry and Physics* 78 (2002) 372-379.
- 7) Boron nitride films synthesized by RF plasma CVD of borane-ammonia and nitrogen, B. Deb, **B. Bhattacharjee**, A. Ganguly, S. Chaudhuri and A. K. Pal, *Materials Chemistry and Physics* 76 (2002) 130-136.
- 8) Characterization of CuInTe<sub>2</sub> thin film synthesized by three source co-evaporation technique, S. Roy, **B. Bhattacharjee**, S. N. Kundu, S. Chaudhuri and A. K. Pal, *Materials Chemistry and Physics* 77 (2002) 365-376.
- 9) Synthesis of diamond-like carbon film by novel electrodeposition route, R. K. Roy, B. Deb, **B. Bhattacharjee** and A. K. Pal, *Thin Solid Films* 422 (2002) 92-97.
- 10) Some aspects of synthesizing semiconductor nanoparticles embedded in SiO<sub>2</sub> matrix by sol-gel technique, A.K. Pal, **B. Bhattacharjee**, S. Chaudhuri and D. Ganguli, Proc. of the Eleventh International Workshop on the Physics of semiconductor devices (December 11-15, 2001), Vol.-46-47 (2), p-286-291. Eds. V. Kumar and P.K. Basu, Allied Publishers limited, 2002. (ISBN No.- 0-8194-4500-2).

## PRESENTATION

### 2019

- (1) • Oral presentation of the paper “Use of ZnO nanoparticles as dietary supplements alters the reproductive performance of male Brooders in *Labeo bata* (Hamilton, 1822)” presented at



the 26th West Bengal State Science and Technology Congress held at The Science city auditorium, Kolkata, India, during February 28-March 1, 2019.

### **2018**

(1) Oral presentation of the paper “Hazardous effect of engineered ZnS nanoparticles on aquatic biota” in Biotechnology session at the International Conference on Advances in environmental and agricultural biotechnology-2018, held at St. Xaviers’ College, Ranchi, India, during February 22-24, 2018.

(2) Participated as the co-author of the paper “The simultaneous role of thyroid and pituitary hormones in regulating the reproductive phases of female *Mystus vittatus*: A histometric approach” in the 25th West Bengal State Science and Technology Congress held at The Science city auditorium, Kolkata, India, during March 3- 4, 2018.

(3) Oral presentation of the paper “Use of ZnO nanoparticles as dietary supplements alters the reproductive performance of male Brooders in *Labeo bata* (Hamilton, 1822)” presented at the Third Regional Science Congress (Western Region) held at The Sidho-Kanho-Birsha University, Purulia, during December 20-21, 2018.

### **2017**

(1) Oral presentation of the topic “ZnS nanoparticle alters the physicochemical parameters of water: A menacing concern for the aquatic milieu” at the National conference held at Sidho-Kanho-Birsa University, Purulia during February 21-22, 2017.

(2) Participated as the co-author of the paper “Alterations in metabolic and haematological parameters in an Indian minor carp *Labeo bata* (Hamilton, 1822) under the exposure of ZnS nanoparticles” in the 24<sup>th</sup> West Bengal State Science and Technology Congress held at The Science city auditorium, Kolkata, India, during February 28- March 1, 2017.

(3) Oral presentation of the topic “Constrained growth of the aquarium fish Black Molly, *Poecilia sphenops* (Valenciennes, 1846), under the exposure of ZnS nanoparticles” as an *invited speaker* in the 2<sup>nd</sup> International Conference on Emerging Materials: Characterization & Applications -2017 to be held at NIT, Duragapur, during March 15-17, 2017.

(4) Oral presentation of the topic “Elastic behaviour of gills in *Mystus vittatus* (Bloch, 1794) when exposed to ZnS nanoparticle” at the Second Regional Science Congress (Western Region) held at The University of Burdwan, Burdwan, during November 16-17, 2017.

### **2016**

(1) Oral presentation of the article “Disquieting effect of ZnS nanoparticle exposure on an Indian minor carp, *Labeo bata* (Hamilton, 1822) and a non-air breathing catfish *Mystus vittatus* (Bloch, 1794) with respect to some of their vital organs: A comparative study” at the international conference on “Aquatic resources and sustainable management” (ICARSM-2016) organized by “Central Calcutta Science & Culture Organization for Youth” in

collaboration with the University of Calcutta, held at Science City, Kolkata, during February 17-19, 2016.

(2) Participated at the 23rd West Bengal State Science and Technology Congress held at The Presidency University, Kolkata, India, during February 28- 29, 2016.

(3) Oral presentation of the topic “Exposure to higher concentration of zinc sulphide nanoparticles results in bioaccumulation and oxidative stress in different organs of Asian dwarf striped catfish *Mystus vittatus* (Bloch, 1794)” at the First Regional Science Congress (Burdwan Division) held Bankura Christian College, Bankura, during November 7-8, 2016.

## 2015

(1) Oral presentation of the article “Environmental hazards of ZnS nanoparticle on aquatic biota with a special reference of changing hepatic and renal histomorphology of Indian minor carp, *Labeo bata* (Hamilton, 1822)” at the 22<sup>nd</sup> West Bengal State Science and Technology Congress held at The University of North Bengal, India, during February 28- March 1, 2015.

(2) Oral presentation of the article “Deleterious effect of ZnS nanoparticles on gills and kidneys of Asian dwarf striped catfish *Mystus vittatus* (Bloch, 1794)” at the International Conference on “Environment & Ecology” (ICEE 2015) held at The Science City, Kolkata, India, during March 2-4, 2015.

(3) Participated as co-author for poster presentation of the article “ZnS nanoparticles results in follicular atresia and apoptosis in the preovulatory follicles of ovary in *Mystus teengara* (Hamilton, 1822)” at the International Conference on “Environment & Ecology” (ICEE 2015) held at The Science City, Kolkata, India, during March 2-4, 2015.

(4) Participated in the national seminar on “World environment day 2015” jointly organized by the Foundation for science and environment, Kolkata and the Scientific and environmental research institute, Kolkata in association with the Confederation of Indian universities, New Delhi, held at Rajabazar science college, the University of Calcutta on June 5, 2015.

(5) Participated in the national seminar on “Higher education: what India needs?” organized by the International Benevolent research foundation, Kolkata in association with the Confederation of Indian universities, New Delhi, held at Rajabazar science college, the University of Calcutta on September 5, 2015.

(6) Attended successfully in the training programme on “Application of Nanotechnology in Aquaculture & Fisheries” jointly organized by the Indian Council of Agricultural Research (ICAR) & the Central Institute of Freshwater Aquaculture (CIFA), held at CIFA, Bhubaneswar, Odisha, during August 24-28, 2015.

(7) Oral presentation of the article “Constrained growth of the aquarium fish black Molly, *Poecilia sphenops* (Valenciennes, 1846) under the exposure of ZnS nanoparticles” at the international seminar on “Exploring the modern approach in biological science: from genome

to organism” organized by the department of Zoology, Sidho-Kanho-Birsha University in association with SEBA, Kolkata, held at Sidho-Kanho-Birsha University, Purulia, during November 25-27, 2015

### RESOURCE PERSON

- Acted as **resource person** and delivered invited lecture at the One Day International Webinar on “World in the Nano Regime” organized by Bankura Zilla Saradamani Mahila Mahavidyapith, on July 18, 2020.
- Oral presentation of the topic “Constrained growth of the aquarium fish Black Molly, *Poecilia sphenops* (Valenciennes, 1846), under the exposure of ZnS nanoparticles” as an **invited speaker** in the 2nd International Conference on Emerging Materials: Characterization & Applications - 2017 to be held at NIT, Durgapur, during March 15-17, 2017.
- Acted as **resource person** and imparted training to the participants of the District level workshop on “Hands on experiments in Optical Science” organized by Science Centre, Midnapore, in collaboration with Ramananda College, Bishnupur during July 21-23, 2016, held at Ramananda College, Bishnupur, Bankura.
- Acted as **resource person** and delivered invited lecture at the short term course on “Nanomaterials and devices”, organized by Department of Physics, National Institute of Technology, Durgapur, during May 7-11, 2016.
- Oral presentation of the topic “Perilous effect of ZnS nanoparticles on testicular cell development and sperm morphology in the Asian striped catfish *Mystus vittatus* (Bloch, 1794)” as an **invited speaker** at the 1<sup>st</sup> International Conference on “Emerging Materials: Characterization & Application” held at Central Glass & Ceramic Research Institute, Kolkata, India during December 4-6, 2014.
- Oral presentation of the topic “Ocean Resources and Ocean Technology” as an **invited speaker** in the seminar as a part of the programme for celebrating Earth Day at the District Science Centre, Purulia on 22nd March, 2011.
- Oral presentation of the article “Capping of semiconductor nanoparticles: Effect on physical properties” as an **invited speaker** at the seminar as a part of the programme for celebrating National Science Day 2007, held at Midnapore College, Midnapore, India, on March 26, 2007.
- Oral presentation of the article “ZnS nanoparticles Embedded in Silica Matrix : Effect of capping on the Physical Properties” as an **invited speaker** at the 2005 Nano Bioengineering International Symposium held at Chung Yang Christian University, Chung -Li, Taiwan, during 15-16 December, 2005.

**MEMBER OF PROFESSIONAL BODIES**

- LIFE MEMBER of the “Global Warming Reduction Centre”. Life Membership No. LM/025/2015, date of issue: 15/12/2015.

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