

Dr Niranjan Biswal, PhD (Chemistry)

Present address

Postdoctoral Fellow, Supervisor: Prof. Yaron Paz
The Wolfson Department of Chemical Engineering,
Technion–Israel Institute of Technology (Technion-IIT),
Haifa 3200003, Israel
E-mail: niranjan@tx.technion.ac.il, &
niranjan8572@gmail.com
Mob. No.: +91-9861594051 & +972-558989622



Permanent address

C/O- Shri Ghanashyam Biswal, At- Kadamdandi
PO- Srirampur Palapatana, Via- Alva, Dist- Kendrapara,
Pin- 754 217, Odisha, India

Career Objective

My deep desire is to learn and know the facts of this fast growing scientific, technological and academic world which encourages me to be a good human being, researcher, technocrat and academician. Try my best to do the right thing in the true and honesty way.

Professional Qualifications

1. Reviewer (27.01.2016- Continuing)

Water Research (Elsevier)

2. Postdoctoral Fellow (25.03.2015-Continuing)

Prof. Yaron Paz, Department of Chemical Engineering, Technion–Israel Institute of Technology (Technion-IIT), Haifa, Israel.

3. Postdoctoral Research Associate (01.07.2014-15.03.2015)

Jr. Scientist and AcSIR Assistant Prof. Dipti Prakasini Das, Colloids & Materials Chemistry (C&MC) Department and Faculty of Chemical Sciences, CSIR-Institute of Minerals and Materials Technology (CSIR-IMMT), Bhubaneswar, Odisha, India.

4. CSIR-Senior Research Fellow (01.07.2011-30.06.2014)

Chief Scientist and AcSIR Prof. K. M. Parida (Retired), C&MC Department and Faculty of Chemical Sciences, CSIR-IMMT.

5. Project Fellow/Research Fellow (18.07.2008-31.03.2011)

Chief Scientist and AcSIR Prof. K. M. Parida (Retired), C&MC Department and Faculty of Chemical Sciences, CSIR-IMMT.

Project Research Work

- **Title:** “Development of transition metal tantalates and oxynitrides for water splitting and pollution abatement” (GAP-0167).
- **Project Research Leader:** Chief Scientist and AcSIR Prof. K. M. Parida (Retired), C&MC Department and Faculty of Chemical Sciences, CSIR-IMMT.
- **Working Place:** C&MC Department, CSIR-IMMT.
- **Sponsor Agency:** Ministry of New & Renewable Energy (MNRE), Govt. of India, New Delhi, India.

Academic Qualifications

- **PhD in Chemistry (2013):** Utkal University (UU), Vani Vihar, Bhubaneswar, Odisha, India.

A Pre-PhD Course Work for the Partial Fulfillment of PhD: Post Graduate (P.G.) Department of Chemistry, UU.

Thesis: “Fabrication of modified metal phosphates: A novel approach towards environmental pollution abatement, energy production and fine chemical synthesis”.

Supervisor: Chief Scientist and AcSIR Prof. K. M. Parida (Retired), C&MC Department and Faculty of Chemical Sciences, CSIR-IMMT.

Working Place: C&MC Department, CSIR-IMMT.

- **MSc in Chemistry (2007):** Sambalpur University (SU), Burla, Sambalpur, Odisha, India.
Seminar: “Mixed ligand triphenylphosphine/arsine Schiff base complexes of ruthenium (II) and their catalytic activities towards oxidation of alcohols”.

A Review for the Partial Fulfillment of MSc: A review on biological activity of transition metal complexes.

Supervisor: Prof. A. K. Panda, P.G. Department of Chemistry (Autonomous), SU.

- **BSc in Chemistry (2005):** Pattamundai College, UU.

- **+2/Intermediate in Science (2002):** Kendrapara College, Council of Higher Secondary Education (CHSE), Bhubaneswar, Odisha, India.
- **HSC (10th) (2000):** Ramachandi High School, Board of Secondary Education (BSE), Cuttack, Odisha, India.

Felicitation and Awards

1. **Felicitation:** Felicitation as an Academician by Hi-Tech Institute of Technology (HIT), Bhubaneswar, Khurda, Odisha on the occasion of National Seminar on Emerging Trends in Engineering & Technology in India (NSETET-2014) and Inauguration of ISTE Chapter/Students' Chapter/Institution Membership of ISTE in collaboration with Indian Society for Technical Education (ISTE), New Delhi, India (3rd-4th September 2014).
2. **Senior Research Fellowship (SRF) (2011-2014):** Council of Scientific and Industrial Research (CSIR), Govt. of India, New Delhi, India.
3. **Post Matric Scholarship in Postgraduate (2005-2007):** ST & SC Development, Minorities & Backward Classes Welfare Department, Govt. of Odisha, Bhubaneswar, India.
4. **National Rural Talent Scholarship (NRTS) (1997-2000):** Board of Secondary Education (BSE), Govt. of Odisha, Cuttack, India.

Research Interests

Photocatalysis (Photocatalytic Water Splitting and Dye Degradation), Electrocatalysis, Heterogeneous Catalysis, Nanotechnology, Colloids and Interface Science, Materials Science, Bio-chemistry, Fine Chemical Synthesis.

Publications

1. Layered and Mixed Layered Metal (IV) Phosphates: An Overview on Syntheses, Modified Systems and Applications. **Niranjan Biswal** and K. M. Parida. **Proceedings of National Seminar on Emerging Trends in Engineering & Technology in India (NSETET-2014) (2014) 57-69**, Hi-Tech Institute of Technology, Khurda, Odisha in collaboration with Indian Society for Technical Education (ISTE), New Delhi, India (3rd-4th September 2014).

2. Cs salt of tungstophosphoric acid promoted zirconium titanium phosphate (CsTPA-ZTP) solid acid catalyst: An active catalyst for the synthesis of bisphenols. **Niranjan Biswal**, Dipti Prakasini Das, K.M. Parida. **J. Chem. Sci.** **126** (2) (March 2014) **455–465**. (SI: Catalysis for Sustainable Development). (Impact Factor-1.191 & No. of Citations-1).
3. Enhanced hydrogen production over CdSe QD/ZTP composite under visible light irradiation without using co-catalyst. **Niranjan Biswal**, K.M. Parida. **Inter. J. Hydro. Ener.** **38** (2013) **1267-1277**. (SPECIAL SECTION: 2011 International Hydrogen and Fuel Cells Conference: from Nanomaterials to Demonstrators). Source: Also in the Book Edition titled as- “Phosphorus Acids-Advances in Research and Application, 2013 Edition, Scholarly Brief, Q. Ashton Acton, PhD, General Editor, Scholarly Edition. (Impact Factor-3.313 & No. of Citations-12).
4. Facile synthesis of visible light responsive V₂O₅/N,S-TiO₂ composite photocatalyst: enhanced hydrogen production and phenol degradation. Satyabadi Martha, D.P. Das, **Niranjan Biswal**, K.M. Parida. **J. Mater. Chem.** **22** (2012) **10695–10703**. (Impact Factor-7.443 & No. of Citations-50).
5. Facile synthesis of InGaZn mixed oxide nanorods for enhanced hydrogen production under visible light. Satyabadi Martha, K. Hemalata Reddy, **Niranjan Biswal**, Kulamani Parida. **Dalton Transactions** **41** (2012) **14107–14116**. (Impact Factor-4.197 & No. of Citations-16).
- 6A. Efficient hydrogen production by composite photocatalyst CdS-ZnS/Zirconium-titanium phosphate (ZTP) under visible light illumination. **Niranjan Biswal**, D.P. Das, Satyabadi Martha, K.M. Parida. **Inter. J. Hydro. Ener.** **36** (2011) **13452-13460**. (SPECIAL SECTION: 2010 Asian/APEC BioH₂). (Impact Factor-3.313 & No. of Citations-43).
- 6B. Corrigendum to “Efficient hydrogen production by composite photocatalyst CdS–ZnS/zirconium–titanium phosphate (ZTP) under visible light illumination” [International Journal of Hydrogen Energy, 36 (2011) 13452–13460]. **Niranjan Biswal**, D.P. Das, Satyabadi Martha, K.M. Parida. **Inter. J. Hydro. Ener.** **37** (2012) **6118**. (SPECIAL SECTION: XII International Symposium on Polymer Electrolytes: New Materials for Application in Proton Exchange Membrane Fuel Cells).
7. Incorporation of silver ions into zirconium titanium phosphate: A novel approach toward antibacterial activity. **Niranjan Biswal**, Satyabadi Martha, Umakanta Subudhi, Kulamani Parida.

Ind. Eng. Chem. Res. 50 (2011) 9479–9486. (SECTION: APPLIED CHEMISTRY). (Impact Factor-2.587 & No. of Citations-9).

8. Solar-light induced photodegradation of organic pollutants over CdS-pillared zirconium–titanium phosphate (ZTP). D.P. Das, **Niranjan Biswal**, Satyabadi Martha, K.M. Parida. **J. Mol. Catal. A: Chemical 349 (2011) 36–41.** (Impact Factor-3.615 & No. of Citations-19).

9. Visible light response photocatalytic water splitting over CdS-pillared zirconium-titanium phosphate (ZTP). K.M. Parida, **N. Biswal**, D.P. Das, S. Martha. **Inter. J. Hydro. Ener. 35 (2010) 5262-5269. (SPECIAL SECTION: 3rd Argentinean and 2nd Latin American Congress in Hydrogen and Sustainable Energy Sources).** Source: **Energy and Ecology Business (2010-07-23) (Hydrogen).** New findings from K.M. Parida and co-authors in the area of hydrogen published, July 23rd, 2010. Source: Also in the Book Edition titled as–**“Phosphoric Acids: Advances in Research and Application, 2011 Edition, Scholarly Brief, Q. Ashton Acton, PhD, General Editor, Scholarly Edition.** (Impact Factor-3.313 & No. of Citations-28).

10. Facile fabrication of hierarchical N-doped GaZn mixed oxides for water splitting reactions. K.M. Parida, S. Martha, D.P. Das, **N. Biswal**. **J. Mater. Chem. 20 (2010) 7144–7149.** (Impact Factor-7.443 & No. of Citations-33).

11. Fabrication of nanocrystalline LaFeO₃: An efficient sol-gel auto-combustion assisted visible light responsive photocatalyst for water decomposition. K.M. Parida, K.H. Reddy, S. Martha, D.P. Das, **N. Biswal**. **Inter. J. Hydro. Ener. 35 (2010) 12161-12168. (SPECIAL SECTION: Bio-Ethanol and Other Renewable Sources and Reforming Process for Sustainable Hydrogen Production).** (Impact Factor-3.313 & No. of Citations-96).

Patents Filed

1. A Novel N-doped GaInZn mixed oxide photocatalyst and a process for the preparation thereof. Kulamani Parida, Satyabadi Martha, Dipti Prakasini Das, **Niranjan Biswal**. **India Patent, 1506DEL2011, 26.05.2011.**

2. Synthesis of a novel N-doped TiV mixed oxide for overall water splitting. Kulamani Parida, Satyabadi Martha, **Niranjan Biswal**, Dipti Prakasini Das. **India Patent, 0536DEL2010, 09.03.2010.**

Publication of Abstracts in Seminar Proceedings

1. Silver-based core-shell nanomaterials for photocatalytic degradation of organic contaminants in water and hydrogen production. Niranjan Biswal and Yaron Paz. “**International conference on Nanoscience, Nanotechnology & Advanced Materials (NANOS-2015)**” organized by Gitam University, Visakhapatnam, Andhra Pradesh (14-17th December, 2015).
2. Layered and Mixed Layered Metal (IV) Phosphates: An Overview on Syntheses, Structural Elucidation, Properties and Applications. Niranjan Biswal and K. M. Parida. “**National Seminar on Emerging Trends in Engineering & Technology in India (NSETET-2014)**” organized by Hi-Tech Institute of Technology (HIT), Khurda, Odisha in collaboration with Indian Society for Technical Education (ISTE), New Delhi, India (3rd-4th September, 2014).
3. Cs salt of tungstophosphoric acid promoted zirconium titanium phosphate (CsTPA-ZTP) solid acid catalyst: An active catalyst for the synthesis of bisphenols. Niranjan Biswal, Dipti Prakasini Das and Kulamani Parida. “**National Seminar on Advances in Special Materials (NSASM-13)**” organized by Dept. of Basic Sciences, HIT (9-10th November, 2013).
4. Visible light response photocatalytic hydrogen production over CdS-ZnS/Zirconium-titanium phosphate (ZTP). Niranjan Biswal, D.P. Das, Satyabadi Martha and K.M. Parida. “**21st National Symposium on Catalysis (CATSYMP-21) “Catalysis for Sustainable Development”**” organized by CSIR-IICT, Hyderabad, Andhra Pradesh, India (10-13th February, 2013).
5. xRGO-Ag₃PO₄; An outstanding catalyst for fast adsorptive-degradation of textile dyes under visible light illumination. A. Samal, D.P. Das, J. Das and N. Biswal. “**21st National Symposium on Catalysis (CATSYMP-21) “Catalysis for Sustainable Development”**” organized by CSIR-IICT (10-13th February, 2013).
6. Synthesis of silver exchanged zirconium titanium phosphate: A new insight into antibacterial study. Niranjan Biswal, S. Martha, U. Subudhi and K. M. Parida. “**100th Indian Science Congress 2012**” organized by Kolkata University, West Bengal, India (3rd-7th January, 2013).
7. Fabrication of a novel CdS-pillared Zirconium-Titanium Phosphate (ZTP) for photodegradation of organic pollutants under solar light. N. Biswal, D.P. Das, S. Martha and

K.M. Parida. **“99th Indian Science Congress 2012”** organized by KIIT University, Bhubaneswar, Odisha, India (3rd-7th January, 2012).

8. Enhanced photocatalytic hydrogen production over CdS-pillared zirconium-titanium phosphate (ZTP) under visible light irradiation. N. Biswal, D.P. Das, S. Martha and K.M. Parida. **“20th National Symposium on Catalysis for Energy Conversion and Conservation of Environment (20thNSC₁₀)”** organized by IIT Madras, Chennai, Tamilnadu, India (19-22th December, 2010).

9. N-doped GaZn-mixed oxides: An efficient visible light driven photocatalyst for photodecomposition of water. S. Martha, D.P. Das, N. Biswal and K.M. Parida. **“20th National Symposium on Catalysis for Energy Conversion and Conservation of Environment (20thNSC₁₀)”** organized by IIT Madras (19-22th December, 2010).

10. Fabrication of a novel CdS-pillared zirconium-titanium phosphate (ZTP) for photocatalytic applications. N. Biswal, D.P. Das, S. Martha and K.M. Parida. **“Development of Novel Materials for Hydrogen Production and Photocatalysis (DNHP-2010)”** organized by C&MC Department, CSIR-IMMT (26-27th March, 2010).

11. Decomposition of water over a novel visible light responsive oxide catalyst. S. Martha, N. Biswal, D.P. Das and K.M. Parida. **“Development of Novel Materials for Hydrogen Production and Photocatalysis (DNHP-2010)”** organized by C&MC Department, CSIR-IMMT (26-27th March, 2010).

12. Photobleaching of textile dyes over a novel CdS-pillared zirconium titanium phosphate (ZTP). N. Biswal, D.P. Das, S. Martha and K.M. Parida. **“National Workshop on Catalysis-2009”** organized by Tezpur University, Assam, India (21th-23rd December, 2009).

13. Overall water splitting over N-doped GaZn-mixed oxides, S. Martha, D.P. Das. N. Biswal and K.M. Parida. **“National Workshop on Catalysis-2009”** organized by Tezpur University (21th-23rd December, 2009).

14. Water splitting over mixed CdS-ZnS intercalated bimetallic acid (BMA). N. Biswal, D.P. Das and K.M. Parida. **“World Hydrogen Technologies Convention 2009 (WHTC 2009, www.whtc2009.org)”** organized by Indian Habitat Centre, New Delhi, India (26-28th August, 2009).

Presentations

1. **Oral presentation: “International conference on Nanoscience, Nanotechnology & Advanced Materials (NANOS-2015)”** organized by Gitam University, Visakhapatnam, Andhra Pradesh (14-17th December, 2015).
2. **Poster presentation: “Why are we so Excited about Excited Semiconductors? (Retreat 2015)”** organized by The Faculty of Chemical Engineering, Technion-IIT, Haifa, Israel (26th November, 2015).
3. **Oral presentation: “National Seminar on Emerging Trends in Engineering & Technology in India (NSETET-2014)”** organized by Hi-Tech Institute of Technology, Khurda, Odisha in collaboration with Indian Society for Technical Education (ISTE), New Delhi, India (3rd-4th September, 2014).
4. **Oral presentation: “99th Indian Science Congress 2012”** organized by KIIT University, Bhubaneswar, Odisha, India (3rd-7th January, 2012).
5. **Poster presentation: “20th National Symposium on Catalysis for Energy Conversion and Conservation of Environment (²⁰NSC₁₀)”** organized by IIT Madras, Chennai, Tamilnadu, India (19-22th December, 2010).

Seminars, Conferences, and Convention

1. **“Retreat 2015”** organized by The Faculty of Chemical Engineering, Technion-IIT, Technion City, Haifa-320003, Israel (26th November, 2015).
2. **Elsevier Author Seminar on “How to Write Great Papers: From title to references, from submission to publication”** organized by the Department of Central Library, Technion-IIT, Haifa, Israel (24th November, 2015).
2. **“The 33rd Israel Vacuum Society conference - IVS 2015”** organized by The Weizmann Institute of Science, Herzl St 234, Rehovot, 7610001, Israel (9th September, 2015).
3. **National Seminar on “RECENT DEVELOPMENTS IN COMPOSITE AND NANO MATERIALS, RDCN-2015”** organized by Depts. of Mechanical Engineering, Civil

Engineering and Physics, Hi-Tech College of Engineering, Bhubaneswar, Odisha, India (7-8th February, 2015).

4. “**Indian Society for Technical Education (ISTE) Annual Diploma Students’ Convention (Odisha Section)-2014**” organized by Hi-Tech Institute of Technology (HIT), Khurda, Odisha, India (26-27th September, 2014).

5. “**National Seminar on Computing, Communication & Information System (NSCCI-14)**” organized by HIT, in collaboration with Institute of Electronic & Telecommunication Engineers (IETE, India) (19-20th September, 2014).

6. “**National Seminar on Advances in Special Materials (NSASM-13)**” organized by **Dept. of Basic Sciences**, HIT, in collaboration with Institute of Engineers (IEI), Orissa State Center (9-10th November, 2013).

7. “**National Seminar on Science and Technology of Functional Materials (NSSTFM)-2013**” organized by Dept. of Basic Science, Hi-Tech College of Engineering, Bhubaneswar, Odisha, India (28-29th September, 2013).

8. “**National Conference on Nano-Materials as Catalysts (NCNMC-2012)**” organized by Dept. of Chemistry, ITER, SOA University, Bhubaneswar, Odisha, India (25-26th January, 2013).

9. “**26th Annual Conference of Orissa Chemical Society (OCS) & National Seminar on Chemistry in Technology**” organized by P.G. Department of Chemistry, Ravenshaw University, Cuttack, Odisha, India (8-9th December, 2012).

10. National level seminar on “**Recent Trends In Chemical Science (RETICS)**” organized by P.G. Department of Chemistry (Autonomous), Sambalpur University (SU), Jyoti Vihar, Burla, Odisha, India (23-25th March, 2007).

11. “**19th Orissa Chemical Society (OCS)’s Annual Conference**” organized by P.G. Department of Chemistry (Autonomous), SU (2005).

Workshops and Pre-school

1. **Schulich Winter School on “Frontiers in Inorganic Chemistry” honoring Prof. Harry B. Gray’s 80th Birthday** organized by the Schulich Department of Chemistry with Grand Technion Energy Programme (GTEP), Technion-IIT, Haifa, Israel (1st-3rd December, 2015).

2. **Technion-Protochips-Nano Instruments** Workshop on "New possibilities in High-End TEM Instrumentation and In Situ TEM Analysis in Gas and Liquid Environments" organized by the Department of Materials Science & Engineering, Technion-IIT, Haifa, Israel (13-14th October, 2015).

3. Workshop on "New and Nano Materials (WNNM)-2012" organized by Institute of Materials Science (IMS), Planetarium Building, Bhubaneswar, Odisha, India (20th-21st January, 2012).

4. Pre-school on "Photocatalysis" organized by NCCR, IIT Madras, Chennai, Tamilnadu, India (9-10th December, 2011).

5. National workshop on "Development of Novel Materials for Hydrogen Production and Photocatalysis (DNHP-2010)" organized by Colloids and Materials Chemistry Department, CSIR-IMMT, Bhubaneswar, Odisha, India (26-27th March, 2010).

6. "60th BRNS-IANCAS (Board of Research in Nuclear Sciences-Indian Association of Nuclear Chemists and Allied Scientists) National Workshop on "Radio Chemistry & Application of Radiosotopes" organized by P.G. Department of Chemistry (Autonomous), Sambalpur University, Jyoti Vihar, Burla, Odisha, India (17-23th August, 2006).

Membership

- **Member [LSO(SM)10] of the Indian Science Congress Association (ISCA)** for 2012-2013, New Delhi, India.
- **Life Time Member [LM-902/12] of Orissa Chemical Society (OCS)**, Odisha, India.
- **Life Member [LM-685] of the Society for Materials Chemistry (SMC), Bhabha Atomic Research Centre (BARC)**, Mumbai 400085, India.

Declaration:

I hereby declare that the information given above is true to the best of my knowledge.

Yours faithfully
Niranjan Biswal