

## **BIO-DATA**

**Dr. INDRAPAL KARBHAL**

*M.Sc, M.Phil, Ph. D.(Chemistry), CSIR-UGC- JRF, NET, GATE*

***Assistant Professor***

*School of Studies in Chemistry*

*Pt. Ravishankar Shukla University*

*Raipur (C.G.)*

E- mail: [ikarbhal@gmail.com](mailto:ikarbhal@gmail.com)

Mobile: +91 8605985169



---

### **Educational Qualifications:**

<b>Examination/ Degree</b>	<b>Board/University</b>	<b>Subject</b>	<b>Year</b>
Ph. D	National Chemical Laboratory- Pune (AcSIR)	Physical and Material Chemistry (Energy Storage)	2020
M. Phil.	Pt. Ravishankar Shukla University, Raipur	Chemistry (Phy.Org. Chem.)	2011
M. Sc.	Pt. Ravishankar Shukla University, Raipur	Chemistry	2010

### **Others Qualification:**

<b>Examination/ Degree</b>	<b>Board/University</b>	<b>Subject</b>	<b>Year</b>
CSIR-UGC JRF	CSIR-New Delhi	Chemical Science	June 2012

CSIR- NET	CSIR-New Delhi	Chemical Science	Dec. 2011
GATE	IIT Delhi	Chemistry	2012

## Experience:

### Teaching experience

As Assistant professor, teaching post graduate students, school of studies in chemistry,  
Pt. Ravishankar Shukla University Raipur (C. G.), February, 2017 to till date.

### CSIR-UGC NET Teaching Experience:

CSIR-NET Coaching experience at UGC Coaching Centre, Pt. Ravishankar Shukla University Raipur (C.G.) during May and June 2012 in the subject of **Chemical Science**.

### Research Experience:

1. *During Ph. D. (Physical and Material Chemistry) work on energy storage devices with thesis title “Boron Carbon Nitride (BCN): Synthesis and Application for Electrochemical Energy Storage Devices”.*
2. One year, During M. Phil. (Chemistry), worked on Physical Organic Chemistry (Kinetics) and submitted dissertation to Pt. Ravishankar Shukla University, Raipur (C.G.) entitled *“Esterolytic Cleavage of Carboxylate and Phosphate Esters by Hydroxamate Ions in Micellar Media”.*
  - Well versed in the synthesis of hetero-atom (B and N) doped carbon, 0D quantum dots, 1D nanotubes, 2D nanosheets and 3D porous carbon (honey comb morphology) for energy storage devices.
  - Experience on the handling of the all the electrochemical technique like cyclic voltammogramic techniques, Impedance techniques, battery analyzer etc.
  - Experience in the doing of the electrochemical applications of the materials and testing of the materials for the batteries, supercapacitor application.
  - Familiar to operate instruments like XRD, Raman, UV-vis., FTIR and have theoretical knowledge of SEM, HR-TEM, XPS, AFM techniques.
  - Assisted M. Tech. Trainee students for their project work

### Research Interest:

Synthesis and Design of heteroatom (B, N, S and P) doped carbon with 0D quantum dots, 1D nanotubes, 2D nanosheets and 3D porous carbon (honey comb morphology) and their application in Energy Storage application such as Supercapacitor, Li/Na ion battery. Synthesis and design of metal and metal oxide nanoparticles as well as their use in biological and photocatalysis.

### Research Area:

Electrochemistry, Energy storage device (Supercapacitor, Li/Na ion battery), Nanotechnology, Sensor, Material Chemistry: Design and Synthesis nanomaterials, Catalyst etc.

### Research Publication:

S. No.	Title	Authers Name	Journal Name	Impact Factor
1.	Laser patterning of boron carbon nitride electrodes for flexible micro-supercapacitor with remarkable electrochemical stability/capacity."	<b>Indrapal Karbhal</b> , Aniruddha Basu, Apurva Patrike, and Manjusha V. Shelke.	<i>Carbon</i> , <b>2020</b> , 171: 750-757.	<b>9.594</b>
2.	Facile Green Synthesis of BCN Nanosheets as High-Performance Electrode Material for Electrochemical Energy Storage"	<b>Indrapal Karbhal</b> , Rami Reddy Devarapalli, Joyashish Debgupta, Vijayamohanan K. Pillai, Pulickel M. Ajayan, and Manjusha V. Shelke.	<i>Chemistry–A European Journal</i> , <b>2016</b> , 22,7134-7140	<b>5.236</b>
3.	Facile Synthesis of Unique Cellulose Triacetate Based Flexible and High Performance Gel Polymer Electrolyte for Lithium Ion Batteries	Trupti C. Nirmale, <b>Indrapal Karbhal</b> , Ramchandra S. Kalubarme, Manjusha V. Shelke, Anjani J. Varma, and Bharat B. Kale.	<i>ACS applied materials &amp; interfaces</i> , <b>2017</b> , 9, 34773-34782.	<b>9.229</b>
4.	Ammonia-modified graphene sheets decorated with magnetic Fe <sub>3</sub> O <sub>4</sub> nanoparticles for the photocatalytic and photo-Fenton degradation of phenolic compounds under sunlight irradiation	Purna K. Boruah, Bhagyasmeeta Sharma, <b>Indrapal Karbhal</b> , Manjusha V. Shelke, and Manash R. Das.	<i>Journal of Hazardous Materials</i> , <b>2017</b> , 325, 90-100.	<b>10.588</b>
5.	Electrochemical capacitive energy storage in PolyHIPE derived nitrogen enriched	Ashvini B Deshmukh, Archana C. Nalawade, <b>Indrapal Karbhal</b> , Mohammed Shadbar	<i>Carbon</i> , <b>2018</b> , 128, 287-295.	<b>9.594</b>

	hierarchical porous carbon nanosheets	Qureshi, and Manjusha V. Shelke.		
6.	Silver nanoparticles for selective detection of phosphorus pesticide containing $\pi$ -conjugated pyrimidine nitrogen and sulfur moieties through non-covalent interactions	Kamlesh Shrivastava, Sushama Sahu, Bhuneshwari Sahu, Ramsingh Kurrey, Tarun Kumar Patle, Tushar Kant, <b>Indrapal Karbhal</b> , Manmohan L. Satnami, Manas Kanti Deb, and Kallol Kumar Ghosh. "	<i>Journal of Molecular Liquids</i> , <b>2019</b> , 275, 297-303.	<b>6.165</b>
7.	Spectroscopic studies on in vitro molecular interaction of highly fluorescent carbon dots with different serum albumins	Reshma Sahu, Vaishnav, Sandeep Kumar, <b>Indrapal Karbhal</b> , Manmohan L. Satnami, and Kallol K. Ghosh.	<i>Journal of Molecular Liquids</i> , <b>2018</b> , 255, 279-287.	<b>6.165</b>
8.	A carbon quantum dot–gold nanoparticle system as a probe for the inhibition and reactivation of acetylcholinesterase: detection of pesticides	Jyoti Korram,, Lakshita Dewangan, Rekha Nagwanshi, <b>Indrapal Karbhal</b> , Kallol K. Ghosh, and Manmohan L. Satnami.	<i>New Journal of Chemistry</i> , <b>2019</b> , 43, 6874-6882.	<b>3.591</b>
9.	Gold nanoprobe for inhibition and reactivation of acetylcholinesterase: An application to detection of organophosphorus pesticides	Manmohan L. Satnami,, Jyoti Korram, Rekha Nagwanshi, Sandeep K. Vaishnav, <b>Indrapal Karbhal</b> , Hitesh K. Dewangan, and Kallol K. Ghosh.	<i>Sensors and Actuators B: Chemical</i> , <b>2018</b> , 267, 155-164.	<b>7.335</b>
10	A low-cost screen printed glass electrode with silver nano-ink for electrochemical detection of H <sub>2</sub> O <sub>2</sub> .	Archana Ghosale,, Kamlesh Shrivastava, Manas Kanti Deb, Vellaichamy Ganesan, <b>Indrapal Karbhal</b> , P. K. Bajpai, and Ravi Shankar. "	<i>Analytical methods</i> , <b>2018</b> , 10, 3248-3255	<b>2.896</b>
11.	Impact of rare-earth metal oxide (Eu <sub>2</sub> O <sub>3</sub> ) on the electrochemical properties of a polypyrrole/CuO polymeric composite for supercapacitor applications."	Majumder, Mandira, Ram Bilash Choudhary, Anukul K. Thakur, <b>Indrapal Karbhal</b>	<i>RSC Advances</i> , <b>2017</b> , 7, 20037-20048.	<b>3.36</b>
12.	Facile synthesis and electrochemical evaluation of PANI/CNT/MoS <sub>2</sub> ternary composite as an electrode material for high performance supercapacitor	Anukul K. Thakur, , Ashvini B. Deshmukh, Ram Bilash Choudhary, <b>Indrapal Karbhal</b> , Mandira Majumder, and Manjusha V. Shelke.	<i>Materials Science and Engineering: B</i> , <b>2017</b> , 223 24-34.	<b>4.051</b>
13.	Sunlight assisted degradation of dye molecules and reduction of toxic Cr (vi) in aqueous medium using magnetically recoverable Fe <sub>3</sub> O <sub>4</sub> /reduced graphene oxide nanocomposite	Purna K. Boruah, Priyakshree Borthakur, Gitashree Darabdhara, Chaitanya K. Kamaja, <b>Indrapal Karbhal</b> , Manjusha V. Shelke, Pallabi Phukan, Dulen Saikia, and Manash R. Das.	<i>RSC Advances</i> <b>2016</b> , 6, 11049-11063.	<b>3.36</b>

14.	O-Nucleophilicity of Hydroxamate Ions for Cleavage of Carboxylate and Phosphate Esters in Cationic Micelles	Manmohan L. Satnami, <b>Indrapal Karbhal</b> , Hitesh K. Dewangan.	<i>International Journal of Chemical Kinetics</i> , <b>2014</b> , 46, 419-432.	<b>1.187</b>
15.	Nucleophilic Attach of Salicylhydroxamate Ion at C=O and P=O Centers in Cationic Micellar Media	Manmohan Lal Satnami, , Sunita Dhritlahre, Rekha Nagwanshi, <b>Indrapal Karbhal</b> , Kallol K. Ghosh, and Faruk Nome	<i>Journal of Physical Chemistry B</i> , <b>2010</b> , 114, 16759-16765.	<b>2.991</b>
16.	A colorimetric nanoprobe based on enzyme-immobilized silver nanoparticles for the efficient detection of cholesterol.	Dewangan, L., Korram, J., <b>Indrapal Karbhal</b> , Nagwanshi, R., Jena, V. K., & Satnami, M. L.	<i>RSC Advances</i> , <b>2019</b> , 9(72), 42085-42095.	<b>3.36</b>
17.	A low-cost paper-based flexible energy storage device using a conducting polymer nanocomposite.	Devi, R., Tapadia, K., Kant, T., Ghosale, A., Shrivastava, K., <b>Karbhal, I.</b> , & Maharana, T.	<i>New Journal of Chemistry</i> , <b>2020</b> , 44(31), 13446-13457.	<b>3.591</b>
18.	"Uncovering the origin of enhanced field emission properties of rGO-MnO <sub>2</sub> heterostructures: a synergistic experimental and computational investigation."	Rondiya, Sachin R., <b>Indrapal Karbhal</b> , Chandradip D. Jadhav, Mamta P. Nasane, Thomas E. Davies, Manjusha V. Shelke, Sandesh R. Jadkar, Padmakar G. Chavan, and Nelson Y. Dzade.	<i>RSC Advances</i> 10, no. 43 <b>2020</b> , 25988-25998.	<b>3.36</b>
19.	"A simple and convenient dry-state SEIRS method for glutathione detection based on citrate functionalized silver nanoparticles in human biological fluids."	Khalkho, Beeta Rani, Ramsingh Kurrey, Manas Kanti Deb, <b>Indrapal Karbhal</b> , Bhuneshwari Sahu, Shubhra Sinha, Yaman Kumar Sahu, and Vikas Kumar Jain.	<i>New Journal of Chemistry</i> <b>2020</b> .	<b>3.591</b>
20.	"CdTe QD-based inhibition and reactivation assay of acetylcholinesterase for the detection of organophosphorus pesticides."	Korram, Jyoti, Lakshita Dewangan, <b>Indrapal Karbhal</b> , Rekha Nagwanshi, Sandeep K. Vaishnav, Kallol K. Ghosh, and Manmohan L. Satnami.	<i>RSC Advances</i> 10, no. 41, <b>2020</b> , 24190-24202.	<b>3.36</b>
21.	Thermodynamic investigation of the interaction between ionic liquid functionalized gold nanoparticles and human serum albumin for selective determination of glutamine	Sahu, Sushama, Srishti Sharma, <b>Indrapal Karbhal</b> , and Kallol K. Ghosh	<i>RSC Advances</i> 10, no. 52, <b>2020</b> , 31400-31410.	<b>3.36</b>
22.	"Smartphone coupled with paper-based chemical sensor for on-site determination of iron (III) in environmental and biological samples."	Shrivastava, Kamlesh, Tushar Kant, <b>Indrapal Karbhal</b> , Ramsingh Kurrey, Bhuneshwari Sahu, Deepak Sinha, Goutam Kumar Patra, Manas Kanti Deb, and Shamsh Pervez.	<i>Analytical and Bioanalytical Chemistry</i> 412, no. 7, <b>2020</b> , 1573-1583.	<b>4.142</b>

23.	A simple and cost-effective paper-based and colorimetric dual-mode detection of arsenic (III) and lead (II) based on glucose-functionalized gold nanoparticles.	Bhuneshwari Sahu, Ramsingh Kurrey, Manas Kanti Deb, Kamlesh Shrivastava, <b>Indrapal Karbhal</b> , and Beeta Rani Khalkho.	<i>RSC Advances</i> 11, no. 34, <b>2021</b> , 20769-20780.	<b>3.36</b>
24.	Interaction of Folic Acid with Mn <sup>2+</sup> Doped CdTe/ZnS Quantum Dots: In Situ Detection of Folic Acid.	Sandeep K. Vaishnav, Jyoti Korram, Rekha Nagwanshi, <b>Indrapal Karbhal</b> , Lakshita Dewangan, Kallol K. Ghosh, and Manmohan L. Satnami	<i>Journal of fluorescence</i> 31, no. 4, <b>2021</b> , 951-960.	<b>2.217</b>
25.	Sources and health risk assessment of potentially toxic elements in groundwater in the mineral-rich tribal belt of Bastar, Central India.	S. Pervez, Dugga, P., Siddiqui, M.N., Bano, S., Verma, M., Candeias, C., Mishra, A., Verma, S.R., Tamrakar, A., <b>Karbhal, I.</b> and Deb, M.K.,	<i>Groundwater for Sustainable Development</i> 14, <b>2021</b> , 100628.	<b>5.21</b>
26.	Architecture of NaFe (MoO <sub>4</sub> ) <sub>2</sub> as a novel anode material for rechargeable lithium and sodium ion batteries."	Tamboli, Asiya M., Mohaseen S. Tamboli, C. S. Praveen, Pravin Kumari Dwivedi, <b>Indrapal Karbhal</b> , Suresh W. Gosavi, Manjusha V. Shelke, and Bharat B. Kale. "	<i>Applied Surface Science</i> 559, <b>2021</b> , 149903.	<b>6.707</b>
27.	"Engineering microstructure of LiFe (MoO <sub>4</sub> ) <sub>2</sub> as an advanced anode material for rechargeable lithium-ion battery	Tamboli, Asiya M., Mohaseen S. Tamboli, Pravin Kumari Dwivedi, C. S. Praveen, <b>Indrapal Karbhal</b> , Manjusha V. Shelke, Bomyung Kim, Chinho Park, and Bharat B. Kale.	<i>Journal of Materials Science: Materials in Electronics</i> 32, no. 19, <b>2021</b> , 24273-24284.	<b>2.478</b>
28.	"N-Doped Carbon Quantum Dot-MnO <sub>2</sub> Nanowire FRET Pairs: Detection of Cholesterol, Glutathione, Acetylcholinesterase, and Chlorpyrifos.	Dewangan, Lakshita, Jyoti Korram, <b>Indrapal Karbhal</b> , Rekha Nagwanshi, and Manmohan L. Satnami.	<i>ACS Applied Nano Materials</i> 4, no. 12, <b>2021</b> , 13612-13624.	<b>5.097</b>
29.	"A graphene-printed paper electrode for determination of H <sub>2</sub> O <sub>2</sub> in municipal wastewater during the COVID-19 pandemic	Kant, Tushar, Kamlesh Shrivastava, <b>Indrapal Karbhal</b> , Sanjay Yadav, Sushama Sahu, Yugal Kishor Mahipal, and Vellaichamy Ganesan.	<i>New Journal of Chemistry</i> 46, no. 3, <b>2022</b> , 1362-1370.	<b>3.591</b>
30.	"Using functionalized asphaltene as effective adsorbents for the removal of chromium and lead metal ions from aqueous solution.	Siddiqui, Mohammad Nahid, Shams Pervez, <b>Indrapal Karbhal</b> , Princy Dugga, Saravanan Rajendran, and Yasmeen Fatima Pervez.	<i>Environmental Research</i> 204, <b>2022</b> , 112361	<b>6.498</b>
31.	"Alkaline Phosphatase Immobilized CdTe/ZnS Quantum Dots for Dual-Purpose	Dewangan, Lakshita, Jyoti Korram, <b>Indrapal Karbhal</b> , Rekha Nagwanshi, Kallol K.	<i>Industrial &amp; Engineering Chemistry</i>	<b>3.72</b>

	Fluorescent and Electrochemical Detection of Methyl Paraoxon	Ghosh, Shams Pervez, and Manmohan L. Satnami.	<i>Research, 2022.</i>	
--	--	---	------------------------	--

**Patent filed: 2020-INV-0033, HONEYCOMB CARBON BORON NITRIDE DOPED WITH LITHIUM**

**Three Book Chapter: (Li ion battery, Silicon and CNF based material)**

**Conference/Symposia: More than 30**

**Member of Board of Studies (Pt. Ravishankar Shukla University Raipur)**

**Google Scholar link:** [https://scholar.google.com/citations?hl=en&user=E-b70CMAAAAJ&view\\_op=list\\_works](https://scholar.google.com/citations?hl=en&user=E-b70CMAAAAJ&view_op=list_works)