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Department of Chemistry  
Charuchandra College  
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## Dr. Parimal Routh

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### ➤ Academic Records

- **Ph. D. :** Polymer Chemistry  
Polymer Science Unit (PSU)  
Indian Association for the Cultivation of Science (IACS), Jadavpur, Kolkata, India  
2011
- **M. Sc. :** Chemistry (Physical Chemistry)  
University of Calcutta  
2007

### ➤ Fellowship

- Graduate Aptitude Test in Engineering (GATE)
- NET, Council of Scientific and Industrial Research (CSIR), JRF & SRF
- Research Associate Fellowship (RA) from Indian Association for the Cultivation of Science, Kolkata, India
- Research Associate Fellowship (RA) from Council of Scientific and Industrial Research

### ➤ Research Interest

Polymer synthesis, Polymer blends for opto-electronic properties, Quantum dots synthesis for biological applications and Synthesis of 2D materials for electrochemical properties.

### ➤ Research Experiences

Sl. No.	Name & Address of the Institute	Designation	From	To	Research Area
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1	Indian Association for the Cultivation of Science (IACS) Kolkata-700032, India	Junior Research Fellow JRF	02-07-2007	01-07-2009	Biomolecular hybrids
2	Indian Association for the Cultivation of Science (IACS) Kolkata-700032, India	Senior Research Fellow SRF	02-07-2009	19-05-2011	Biomolecular hybrids

➤ **Post-doctoral Research Experiences**

Sl. No.	Name & Address of the Institute	Designation	From	To	Research Area
1	Indian Association for the Cultivation of Science (IACS) Kolkata-700032, India	Research Associate I	20-05-2011	30-04-2012	Polymer composite
2	Ulsan National Institute of Science and Technology (UNIST) South Korea	Post-doctoral Research Fellow	01-05-2012	30-04-2013	Graphene
3	Indian Association for the Cultivation of Science (IACS) Kolkata-700032, India	Research Associate II	01-05-2013	31-07-2013	Quantum dots
4	Nanyang Technological University (NTU) Singapore	Post-doctoral Research Fellow	01-08-2013	30-04-2015	2D Materials

➤ **List of Publications**

1. A new facile synthesis of tungsten oxide from tungsten disulfide: Structure dependent supercapacitor and negative differential resistance properties  
D Mandal, P Routh, AK Nandi  
Small, 2018; 14 (4): 1702881. ISSN 1613-6829.
2. Water-soluble ionic polythiophenes for biological and analytical applications  
S Das, P Routh, R Ghosh, DP Chatterjee, AK Nandi  
Polymer International, 2017; 66 (5): 623-639. ISSN 1097-0126.
3. Conductive MoS<sub>2</sub> Quantum Dot/Polyaniline Aerogel for Enhanced Electrocatalytic Hydrogen Evolution and Photoresponse Properties  
S Das, R Ghosh, P Routh, A Shit, S Mondal, A Panja, AK Nandi  
ACS Applied Nano Materials, 2018; 1 (5): 2306-2316. ISSN: 2574-0970.
4. Supercapacitor and photocurrent performance of tunable reduced graphene oxide  
D Mandal, P Routh, AK Nandi

ChemistrySelect, 2017; 2 (10): 3163-3171. ISSN 2050-7488.

5. Boron-nitrogen-phosphorous doped graphene nanoplatelets for enhanced electrocatalytic activity

P Routh, SH Shin, SM Jung, HJ Choi, IY Jeon, JB Baek

European Polymer Journal, 2018; 99, 511-517, ISSN 0014-3057.

6. Electrochemically modified graphite paper as an advanced electrode substrate for supercapacitor application

D Mandal, P Routh, AK Mahato, AK Nandi

Journal of Materials Chemistry A, 2019; 7 (29), 17547-17560. ISSN 2050-7488.

7. Quantum-Dot-Mediated Controlled Synthesis of Dual Oxides of Molybdenum from MoS<sub>2</sub>: Quantification of Supercapacitor Efficacy

D Mandal, P Routh, AK Nandi

Chemistry—An Asian Journal, 2018; 13 (24), 3871-3884. ISSN 1861-471X.

8. Flexible Solid-State Symmetric Supercapacitors Using H<sub>x</sub>WO<sub>3</sub>@Reduced Graphene Oxide Composite with High Volumetric Energy and Power Densities

D Mandal, P Routh, AK Mahato, AK Nandi

ChemElectroChem, 2019; 6 (19), 5136-5148. ISSN 2196-0216.

9. Ananthanarayanan A., Wang, Y., **Routh P.**, Alam Sk M., Than A., Lin M., Zhang J., Chen J., Sun H., Chen P. Nitrogen and phosphorus co-doped graphene quantum dots: synthesis from adenosine triphosphate, optical properties, and cellular imaging. Nanoscale, 2015; 7(17): 8159-8165. ISSN 2040-3372.

10. Ananthanarayanan A., Wang, X.; **Routh P.**, Sana B., Lim S., K. D.-H., Lim K.-H., Li J.; Chen P. Facile Synthesis of Graphene Quantum Dots from 3D Graphene and their Application for Fe<sup>3+</sup> Sensing.

Adv. Funct. Mater., 2014; 24 (20): 3021–3026. ISSN 1616-3028.

11. Wang X., Sun G., **Routh P.**, Kim D.-H., Huang W., Chen P. Heteroatom-doped graphene materials: syntheses, properties and applications.

Chem. Soc. Rev., 2014; 43 (20): 7067-7098. ISSN 1460-4744.

12. **Routh P.**, Das S., Shit A., Bairi P., Das P., Nandi A. K. Graphene Quantum Dots from a Facile Sono-Fenton Reaction and its Hybrid with a Polythiophene graft Copolymer towards Photovoltaic Application.

ACS Appl. Mater. Interfaces, 2013; 5(23): 12672–12680. ISSN 1944-8252.

13. **Routh P.**, Mukherjee P., Nandi A. K. RNA-Poly(*o*-methoxyaniline) Hybrid Templated Growth of Silver Nanoparticles and Nanopackaging: Physical and Electronic Properties.

Langmuir, 2010; 26 (7): 5093–5100. ISSN 1520-5827.

*(Highlighted in Nature India doi:10.1038/nindia.2010.53)*

14. **Routh P.**, Mukherjee P., Nandi A. K. Enhanced Optoelectronic Properties of RNA–Poly(*o*-methoxyaniline) Hybrid Containing Monodispersed Au Nanoparticles,

J. mater. Chem., 2010; 20 (34): 7214-7221. ISSN 1364-5501.

15. **Routh P.**, Garai A., Nandi A. K. Enhanced Photoluminescence and Negative Differential Resistance of Polyaniline Sulfonic Acid - RNA - Au Nanobiocomposites. Phys. Chem. Chem. Phys., 2011; 13 (30): 13670–13682. ISSN 1463-9084.

*(Highlighted in Nature India doi: 10.1038/nindia.2011.124)*

16. **Routh P.**, Layek R. K., Nandi A. K. Negative differential resistance and improved optoelectronic properties in Ag nanoparticles-decorated graphene oxide–riboflavin hybrids. *Carbon*, 2012; 50 (10): 3422-3434. ISSN 0008-6223.
17. Nandi S., **Routh P.**, Layek R. K., Nandi A. K. Graphene Sulfonic Acid-Organic Dye Ionic Complex with Bimolecular-Sensing and Opticalelectronic Properties. *Biomacromolecules*, **2012**; 13 (10): 3181–3188. ISSN 1526-4602.
18. **Routh P.**, Das S., Nandi A. K. Polythiophene-g-poly(dimethylaminoethyl methacrylate) stabilized Au nanoparticles and its morphology tuning by RNA with variation of electronic properties. *RSC Adv.*, 2012; 2(30): 11295-11305. ISSN 2046-2069.
19. Bairi P.; Roy B.; **Routh P.**, Sen K.; Nandi A. K. Self-sustaining, fluorescent and semi-conducting co-assembled organogel of Fmoc protected phenylalanine with aromatic amines. *Soft Matter*, 2012; 8 (28): 7436-7445. ISSN 1744-6848.
20. **Routh P.**, Mukherjee P., Dawn A., Nandi A. K. Self Assembly of Poly(o-methoxy aniline) with RNA and RNA/DNA Hybrids Physical Properties and Conformational Change of Poly(o-methoxy aniline). *Biophysical Chemistry*, 2009; 143 (3): 145–153. ISSN 0301-4622.