

Name: Dr. Ananta Kumar Mishra

**Designation: Adjunct Assistant Professor &
Manager (research) at GSFC Ltd**

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School: School of Science



Research Interest:

- **Synthesis / Extraction of Valuable Products from Industrial Wastes**
- **Preparation of Pharma Intermediates and Speciality Chemicals**
- **Synthesis of Nanomaterials**
- **Preparation of Polymer & its Nanocomposites**
- **Fabrication of Polymer Membrane for Fuel Cell Applications**

Academic Background:

Degree	Subject	University	Year
<u>PhD</u>	<u>Polymer Chemistry</u>	<u>IIT Kharagpur</u>	<u>2010</u>
<u>MPhil</u>	<u>Organic Chemistry</u>	<u>Sambalpur University</u>	<u>2003</u>
<u>MSc</u>	<u>Organic Chemistry</u>	<u>Sambalpur University</u>	<u>2002</u>

Professional Experience:

From	Period	Position	Organisation
<u>March 2014</u>	<u>>7 years</u>	<u>Manager (Research)</u>	<u>Gujarat State Fertilizers & Chemicals Limited, Vadodara</u>
<u>April 2013</u>	<u>5 months</u>	<u>Guest Researcher</u>	<u>Leibniz-Institut für Polymerforschung (IPF) Dresden, Germany</u>
<u>Nov 2010</u>	<u>2.5 years</u>	<u>Post Doctoral Researcher</u>	<u>Chonbuk National University, South Korea</u>
<u>Nov 2004</u>	<u>1 year</u>	<u>Junior Research Fellow</u>	<u>CSMCRI (CSIR), Bhavnagar</u>

Teaching Engagements:

Title	Course Code	Class Name	School Name

Publications:

1. A. K. Mishra, M C Valodkar, P B Vaishnav, "Preparation of complex polyol ester base oil for lubricant from cyclohexane oxidation waste water". Indian Journal of Chemical Technology 27 (2020) 521-524.
2. N. H. Kim, A. K. Mishra, D.-Y. Kim, J. H. Lee, "Synthesis of sulfonated poly(ether ether ketone)/layered double hydroxide nanocomposite membranes for fuel cell applications". Chemical Engineering Journal 272 (2015) 119-127.
3. Q. Li, Y. Guo, W. Li, S. Qiu, C. Zhu, X. Wei, M. Chen, C. Liu, S. Liao, Y. Gong, A. K. Mishra, L. Liu, "Ultrahigh Thermal Conductivity of Assembled Aligned Multilayer Graphene/Epoxy Composite". Chemistry of Materials 26 (2014) 4459-4465.
4. A. K. Mishra, N. H. Kim, D. Jung, J. H. Lee, "Enhanced mechanical properties and proton conductivity of Nafion-SPEEK-GO composite membranes for fuel cell applications". Journal of Membrane Science 458 (2014) 128-135.
5. A. K. Mishra, N. H. Kim, J. H. Lee, "Effects of ionic liquid-functionalized mesoporous silica on the proton conductivity of acid-doped poly(2,5-benzimidazole) composite membranes for high-temperature fuel cells". Journal of Membrane Science 449 (2014) 136-145.
6. J. S. Choi, A. K. Mishra, N. H. Kim, G. Shin, J. H. Lee, "Synthesis and characterization of novel thiophene-based polybenzimidazole membrane for high-temperature fuel cells". Journal of Applied Electrochemistry 43 (2013) 749-754.
7. Q. Li, A. K. Mishra, N. H. Kim, T. Kuila, K.-t. Lau, J. H. Lee, "Effects of processing conditions of poly(methylmethacrylate) encapsulated liquid curing agent on the properties of self-healing composites". Composites Part B: Engineering 49 (2013) 6-15.

8. T. Kuila, A. K. Mishra, P. Khanra, N. H. Kim, J. H. Lee, "Recent advances in the efficient reduction of graphene oxide and its application as energy storage electrode materials". *Nano Scale* 5 (2013) 52-71.
9. X. F. Yi, A. K. Mishra, N. H. Kim, B. C. Ku, J. H. Lee, "Synergistic effects of oxidized CNTs and reactive oligomer on the fracture toughness and mechanical properties of epoxy". *Composites Part A: Applied Science and Manufacturing* 49 (2013) 58-67.
10. A. K. Mishra, S. Bose, T. Kuila, N. H. Kim, J. H. Lee, "Silicate-based polymer-nanocomposite membranes for polymer electrolyte membrane fuel cells". *Progress in Polymer Science* 37 (2012) 842-869.
11. A. K. Mishra, T. Kuila, D.-Y. Kim, N. H. Kim, J. H. Lee, "Protic ionic liquid functionalized mesoporous silica-based hybrid membranes for proton exchange membrane fuel cells". *Journal of Materials Chemistry* 22 (2012) 24366-24372.
12. A. K. Mishra, T. Kuila, N. H. Kim, J. H. Lee, "Effect of peptizer on the properties of Nafion-Laponite clay nanocomposite membranes for polymer electrolyte membrane fuel cells". *Journal of Membrane Science* 389 (2012) 316-323.
13. T. Kuila, S. Bose, A. K. Mishra, P. Khanra, N. H. Kim, J. H. Lee, "Chemical functionalization of graphene and its applications". *Progress in Materials Science* 57 (2012) 1061-1105.
14. S. Bose, T. Kuila, A. K. Mishra, R. Rajasekar, N. H. Kim, J. H. Lee, "Carbon-based nanostructured materials and their composites as supercapacitor electrodes". *Journal of Materials Chemistry* 22 (2012) 767-784.
15. T. Kuila, A. K. Mishra, P. Khanra, N. H. Kim, Md. E. Uddin, J. H. Lee, "Facile method for the preparation of water dispersible graphene using sulfonated poly (ether-ether-ketone) and its application as energy storage materials". *Langmuir* 28 (2012) 9825-9833.
16. L. Mao, A. K. Mishra, N. H. Kim, J. H. Lee, "Poly(2,5-benzimidazole)-silica nanocomposite membranes for high temperature proton exchange membrane fuel cell". *Journal of Membrane Science* 411-412 (2012) 91-98.

17. T. X. H. Nguyen, A. K. Mishra, J. S. Choi, N. H. Kim, J. H. Lee, "Synthesis and characterization of phosphoric acid-doped Poly(2,5-benzimidazole) membrane for high temperature polymer electrolyte membrane fuel cells". *Trans. Korean Hydrogen New Energy Soc.* 23 (2012) 26-33.
18. S. Bose, A. K. Mishra, T. Kuila, N. H. Kim, O.-K. Park, J. H. Lee, "Tunable electrical conductivity and dielectric properties of triglycine sulfate-polypyrrole composite". *Chemical Engineering Journal* 187 (2012) 334-340.
19. T. Kuila, S. Bose, P. Khanra, A. K. Mishra, N. H. Kim, J. H. Lee, "A green approach for the reduction of graphene oxide by wild carrot root". *Carbon* 50 (2012) 914-921.
20. T. Kuila, S. Bose, A. K. Mishra, P. Khanra, N. H. Kim, J. H. Lee, "Effect of functionalized graphene on the physical properties of linear low density polyethylene nanocomposites". *Polymer Testing* 31 (2012) 31-38.
21. S. Bose, T. Kuila, A. K. Mishra, N. H. Kim, J. H. Lee, "Dual role of glycine as a chemical functionalizer and a reducing agent in the preparation of graphene: an environmentally friendly method". *Journal of Materials Chemistry* 22 (2012) 9696-9703.
22. A. K. Mishra, S. Chattopadhyay, P. R. Rajamohanam, G. B. Nando, "Effect of tethering on the structure-property relationship of TPU-dual modified Laponite clay nanocomposites prepared by Ex-situ and In-situ techniques". *Polymer* 52 (2011) 1071-1083.
23. A. K. Mishra, Rajamohanam P. R., G. B. Nando, S. Chattopadhyay, "Structure-property of TPU-clay nanocomposite based on covalent and dual-modified Laponite". *Advanced Science Letters* 4 (2011) 65-73.
24. S. Muthusamy, R. Ramkumar, A. K. Mishra, "Chemo- and diastereoselective synthesis of spiro-dioxolane from intermolecular carbonyl ylide cycloaddition with aryl aldehyde". *Tetrahedron Letters* 52 (2011) 148-150.
25. S. Bose, T. Kuila, A. K. Mishra, N. H. Kim, J. H. Lee, "Preparation of non-covalently functionalized graphene using 9-anthracene carboxylic acid". *Nanotechnology* 22 (2011) 405603.

26. T. Kuila, S. Bose, P. Khanra, A. K. Mishra, N. H. Kim, J. H. Lee, "Recent advances in graphene-based biosensors". *Biosensors and bioelectronics* 26 (2011) 4637-4648.
27. A. K. Mishra, S. Mushtaq, G. B. Nando, S. Chattopadhyay, "Effect of Cloisite and modified Laponite clays on the rheological behavior of TPU-clay nanocomposites". *Rheologica Acta* 49 (2010) 865-878.
28. A. K. Mishra, S. Chattopadhyay, G. B. Nando, "Effect of modifiers on morphology and thermal properties of novel thermoplastic polyurethane-peptized Laponite nanocomposite". *Journal of Applied Polymer Science* 115 (2010) 558-569.
29. A. K. Mishra, S. Chattopadhyay, G. B. Nando, E. Devadoss, "Synthesis and Characterization of Elastomeric Polyurethane-Laponite Nanocomposite". *Designed Monomers and Polymers* 11 (2008) 395-407.
30. A. K. Mishra, G. B. Nando, S. Chattopadhyay, "Exploring preferential association of Laponite and Cloisite with soft and hard segments in TPU-clay nanocomposite prepared by solution mixing technique". *Journal of Polymer Science Part B: Polymer Physics* 46 (2008) 2341-2354.

Book Chapters:

1. A. K. Mishra, M. C. Valodkar, "Polymer Nanocomposites for Energy and Fuel Cell Applications" In: "Properties and Applications of Polymer Nanocomposites Clay and Carbon Based Polymer Nanocomposites" Eds: D. K. Tripathy, B. P. Sahoo. Publisher: Springer-Verlag GmbH (2017) pp 107-137; ISBN: 978-3-662-53515-8.
2. A. K. Mishra, T. Kuila, N. H. Kim, J. H. Lee, "Polymer-layered silicate nanocomposite membranes for fuel cell application" In: "Handbook of Polymer nanocomposites. Processing, Performance and Application, Vol A: Layered Silicates" Eds: J. K. Pandey, K. R. Reddy, A. K. Mohanty, M. Mishra. Publisher: Springer-Verlag GmbH (2013) pp 481-509; ISBN: 978-3-642-38648-0.

Conferences:

1. A. K. Mishra, M. C. Valodkar, "Recovery of Adipic acid and synthesis of HFC Grade Lubricant from waste stream of cyclohexane oxidation plant", One day Seminar on "Wealth from Waste" Ankleshwar, Gujarat, India 2018.

2. A. K. Mishra, N. H. Kim, B. Joo, J. H Lee, “Nafion-peptized Laponite clay nanocomposite membrane for PEMFC” PFAM XX, Hong Kong 2012.
3. A. K. Mishra, Q. Li, N.H. Kim, T. Kuila, J. H Lee, “Mesoporous silica-Nafion nanocomposite membranes for PEMFC application” Proceedings of the Korean Hydrogen & new Energy Society, Yeosu, South Korea 2011.
4. A. K. Mishra, N. H. Kim, B. Joo, J. H Lee, “Nafion-Laponite XLS nanocomposite for PEMFC” Proceedings of the Korean Hydrogen & new Energy Society, Jeju, South Korea 2011.
5. A. K. Mishra, S. Chattopadhyay, G. B. Nando, “Polyurethane-Laponite clay nanocomposite” Rubber Expo 09, Kolkata 2009.
6. A. K. Mishra, G. B. Nando, S. Chattopadhyay, “Effect of aspect ratio and state of dispersion on the rheological behavior of TPU-clay nanocomposite” PPS-25, Goa, 2009.
7. A. K. Mishra, S. Chattopadhyay, G. B. Nando, “Synthesis and characterization of polyurethane Laponite nanocomposite” in Polychar-16, Lucknow, 2008.
8. A. K. Mishra, E. Suresh, S. Muthusamy “A three-component reaction involving Rhodium (II) Carbenoids: Synthesis of Spiro-1,3-Dioxolanes and Spiro-1,3-Oxazolidines” in OCCB-2006, National Chemical Laboratory, Pune (An ACS-CSIR joint conference).

Book:

Awards/Recognitions:

- **Editorial Board Member for “International Journal of Nanotechnology and Applications”.**
- **National Eligibility Test (JRF-UGC) -2003 Dec**
- **National Eligibility Test (Lectureship) -2003 June**
- **Life Member of “Chemical Research Society of India (CRSI)” and “The Society of Polymer Science India (SPSI)”.**