

## DR. NAYAN RANJAN SINGHA

**Name:** Nayan Ranjan Singha  
**E-mail id:** drs.nrs@gmail.com  
**Contact no.:** 09748097101  
**Office Address:** Block-LB, Sector-III, Salt Lake City, Kolkata-700106  
**Phone (O):** 033-2335 6977 (Extn. 407)  
**Fax:** 033-23358353

### Awards Received:

#### Post-Doctoral:

Dr. D.S. Kothari Postdoctoral Fellowship (University Grants Commission (UGC), Govt. of India)  
Post-Doctoral Research Associate, CSIR (Council of Scientific and Industrial Research, Govt. of India)

#### Ph.D. Fellowship:

Senior Research fellowship, CSIR (Council of Scientific and Industrial Research, Govt. of India)  
Senior Research fellowship, TEQIP (University of Calcutta, Funded by World Bank)

**B.Sc.:** National Scholarship from University of Calcutta after qualifying B.Sc. (Hons.) (Govt. of West Bengal)

**Higher Secondary:** National Scholarship from WBCHSE (Govt. of West Bengal), 1<sup>st</sup> in district subdivision

**Madhyamik:** National Scholarship from WBBSE (Govt. of West Bengal)

### Ongoing Projects:

**1. Title:** “Synthesis, characterization and application of natural polymer based hydrogels for adsorptive removal”

**Funding agency:** SERB Fast Track Proposal for Young Scientists, DST, Govt. of India, **42 Lakhs (Approx.)**

**2. Title:** “Use of natural polymer based IPNs and SIPNs for adsorptive removal of dyes and heavy metal ions: case study of synthesis, characterization, application and modeling”

**Funding agency:** DST, Govt. of West Bengal, **10.5 Lakhs (Approx.)**

### **Projects Submitted:**

**1. Title:** “Modification, characterization, application and modeling of Chitosan and Leather solid waste based novel polymeric hydrogels for adsorptive removal of water contaminants”,

**Funding agency:** UGC, Govt. of India, 2015-16

**2. Title:** “Potential of Leather Buffing Dust as reinforcing additive for Epoxidized Natural Rubber Composites”

**Funding agency:** UGC, Govt. of India, 2015-16 (Co-Investigator)

### **Research Group:**

#### **Ph.D. Students:**

1. Manas Mahapatra, JRF - UGC (Enrolled: Department of Chemistry, University of Calcutta)
2. Mrinmoy Karmakar, DST-INSPIRE Fellow (Enrolled: Department of Chemistry, University of Calcutta)
3. Biplab Mondal, JRF - UGC (Enrolled: Department of Chemistry, University of Calcutta)
4. Arnab Dutta, LS-NET, GATE-1760
5. Chandan Roy (Part time)

#### **M. Tech. Project Students:**

1. Santosh Mukherjee (2015-2016)
2. Pradipta Surya Biswas (2015-2016)
3. Rathindra Nath Mistry (2015-2016)

#### **M.Sc. Project Students:**

1. Himarati Mondal (2015-2016)
2. Sourav Dey (2015-2016)
3. Sayak Misra (2015-2016)
4. Entajul Rahaman (2015-2016)

### **Research area of interest:**

1. Synthesis, Characterization, Modeling and Application of Natural Polymer based IPN and SIPN Hydrogels for Drug Delivery and Adsorptive Removal of Dyes/Heavy Metal Ions
2. Synthesis, Characterization, Modeling, Optimization and Application of Natural/Synthetic Polymer based Membranes for Pervaporative Separation of binary liquid mixtures

3. Modification and Characterization of Natural, Synthetic and Collagen based novel polymeric Hydrogels and their Applications for removal of water contaminants
4. Optimization of process variables by Response Surface Methodology (RSM) and Artificial Neural Network (ANN)
5. Synthesis, Characterization and Application of Nano Materials
6. Application of Synthetic and Semi-Synthetic Membranes in Microbial Fuel Cell (MFC)

**Some publications in international journals:**

1. M. Mahapatra, M. Karmakar, B. Mondal, **N. R. Singha**, Role of ZDC/S ratio for pervaporative separation of organic liquids through modified EPDM membranes: Rational mechanistic study of vulcanization, **RSC Advances** - Revision submitted, 2016. [**Impact Factor=3.84**]
2. M. Karmakar, M. Mahapatra, B. Mondal, K. Bhunia, **N. R. Singha**, RSM approach to study the role of nano fillers for pervaporative separation of traces of organics: A comprehensive mechanistic study of NR crosslinking – under review, 2016.
3. M. Karmakar, M. Mahapatra, B. Mondal, P. K. Chattopadhyay, **N. R. Singha**, Use of waste collagen fiber for the adsorptive removal of dyes: An ANN approach of optimization - under communication, 2016.
4. M. Mahapatra, M. Karmakar, B. Mondal, P. K. Chattopadhyay, **N. R. Singha**, Use of physically and chemically modified collagen fiber for the adsorptive removal of dyes and metal ions: An ANN approach of optimization - under communication, 2016.
5. M. Mahapatra, M. Karmakar, B. Mondal, **N. R. Singha**, A RSM approach to study swelling and membrane intrinsic property variations in pervaporative separation of traces of organic: An unambiguous mechanistic study of S-ZDC-SBR vulcanization - under review, 2016.

6. **N. R. Singha**, T. K. Parya, S. K. Ray, Dehydration of 1,4-Dioxane By Pervaporation Using Filled and Crosslinked Polyvinyl alcohol Membrane, **Journal of Membrane Science** 340 (2009) 35-44 (Elsevier). **[Impact Factor =5.094]**
7. **N. R. Singha**, S. Kar, S. Ray, S. K. Ray, Separation of Isopropyl alcohol-water mixtures by Pervaporation using crosslink IPN membranes, **Chemical Engineering and Processing: Process Intensification** 48 (2009) 1020–1029, (Elsevier). **[Impact Factor =2.328]**
8. **N. R. Singha**, P. Das, S. B. Kuila and S. K. Ray, Separation of Toluene-Methanol mixtures by Pervaporation using crosslink IPN membranes, **Chemical Engineering and Processing: Process Intensification** 48 (2009) 1560–1565 (Elsevier). **[Impact Factor =2.328]**
9. **N. R. Singha**, S. Kar, S. K. Ray, Synthesis of Novel polymeric membrane for separation of MTBE-methanol by Pervaporation, **Separation science and technology** 44 (2009) 1–21 (Taylor Francis). **[Impact Factor =1.20]**
10. **N. R. Singha**, P. Das, S. K. Ray, Recovery of pyridine from water by pervaporation using filled and crosslinked EPDM membranes, **Journal of Industrial and Engineering Chemistry**, 19 (2013) 159-173 (Elsevier). **[Impact Factor =2.063]**
11. **N. R. Singha**, S. Kar, S. K. Ray, Synthesis of chemically modified polyvinyl alcohol membranes for Dehydration of Dioxane by Pervaporation, **Separation science and technology**, 44 (2009) 422–446 (Taylor Francis). **[Impact Factor =1.20]**
12. **N. R. Singha**, S. K. Ray, Removal of pyridine from water by pervaporation using crosslinked and filled natural rubber membranes, **Journal of Applied Polymer Science**, 124 (2012) E99-E107 (John Wiley). **[Impact Factor =1.60]**
13. **N. R. Singha**, S. K. Ray, Synthesis of chemically modified polyvinyl alcohol membranes for separation of toluene-methanol mixtures by Pervaporation, **Separation science and technology**, 45 (2010) 2298–2307 (Taylor Francis). **[Impact Factor =1.20]**
14. **N. R. Singha**, S. Ray, S. K. Ray, Removal of pyridine from water by Pervaporation using filled SBR membranes, **Journal of Applied Polymer Science**, 121 (2011) 1330–1334, (John Wiley). **[Impact Factor =1.60]**

15. S. Ray, **N. R. Singha** and S. K. Ray, Removal of tetrahydrofuran (THF) from water by pervaporation using homo and blend polymeric membranes, **Chemical Engineering Journal**, 149 (2009) 153–161 (Elsevier). [**Impact Factor =4.181**]
16. S. B. Kuila, **N. R. Singha**, S. K. Ray, P. Das, Dehydration of Acetic acid by Pervaporation Using filled IPN membranes, **Chemical Engineering and Processing: Process Intensification**,50 (2011) 391–403 (Elsevier). [**Impact Factor =2.328**]
17. P. Das, **N.R. Singha**, S.K. Ray, S.B. Kuila, H.S. Samanta, Systematic choice of crosslinker and filler for pervaporation membrane: A case study with dehydration of isopropyl alcohol–water mixtures by polyvinyl alcohol membranes, **Separation & Purification Technology**, 81 (2011) 159-173 (Elsevier). [**Impact Factor =3.534**]
18. H. S. Samanta, **N. R. Singha**, P. Das, S. K. Ray, Separation of acid-water mixtures by pervaporation using nano particle filled mixed matrix copolymer membranes, **Journal of Chemical Technology and Biotechnology**, 87 (2012) 608-622 (John Wiley). [**Impact Factor =2.494**]