

BIOGRAPHICAL SKETCH

NAME Sarkar, Kishor, Ph.D., M.Tech.	POSITION TITLE Assistant Professor Department of Polymer Science & Technology University of Calcutta
Email id kishorpst@gmail.com	

EDUCATION/TRAINING (Begin with baccalaureate or other initial professional education, such as nursing, include postdoctoral training and residency training if applicable.)

INSTITUTION AND LOCATION	DEGREE	MM/YY	FIELD OF STUDY
University of Calcutta, Kolkata, India	B.Sc.	06/2003	Chemistry
University of Calcutta, Kolkata, India	B.Tech.	05/2006	Polymer Science & Technology
University Of Calcutta, Kolkata, India	M.Tech.	06/2008	Polymer Science & Technology
University of Calcutta, Kolkata, India	Ph.D.	08/2014	Polymer Science & Technology
Indian Institute of Science, Bangalore, India	Postdoc	07/2013-10/2013	Biomaterials for Tissue Engineering
Indian Institute of Science, Bangalore, India	Postdoc	11/2013-05/2015	Tissue Engineering and Gene Therapy
University of Pittsburg, USA	Postdoc	05/2015-04/2016	Gene Therapy and Immunotherapy

A. Personal Statement

I have the expertise, leadership and motivation necessary to successfully carry out the proposed work. I have a broad background in polymer chemistry, with specific training and expertise in key research areas for this application. I am trained in Chemistry (B.Sc.), Polymer Science and Technology (B.Tech., M.Tech., and Ph.D.) and Biomaterials/ Tissue Engineering (Postdoc). Despite the extensive experience in Polymer Chemistry, I got interested in interdisciplinary work and I am applying my skills to diverse multidisciplinary fields. Therefore, I have dedicated myself to work on multidisciplinary field including material chemistry, drug/gene delivery and tissue engineering fields as evident from my publications. During my Ph. D., I extensively worked on the development of chitosan based efficient nonviral carrier for gene therapy application. After completing Ph. D. (July, 2013), I immediately joined as postdoctoral research associate in Biomaterials and Tissue Engineering Laboratory and later I was awarded the Dr. D. S. Kothari Postdoctoral Fellowship from UGC (Nov, 2013). During my postdoctoral work at IISc (July, 2013-April, 2015), I developed a novel polyester from polyethylene terephthalate (PET) waste material for tissue engineering application. In addition to this, I also developed gelatin based novel nonviral carrier for gene delivery and it showed very high transfection efficiency compared to commercialized nonviral carriers such as Lipofectamine 2000 (Invitrogen) and DreamFect Gold (OZ Bioscience) against various cell lines including HeLa, SVEC, A549, MC3T3-E1 and even primary cell, hMSC with minimal toxicity. This compound has been filed for Indian Patent in 2014 (9259/RQ-CHE/2014).

At University of Pittsburgh, I worked as postdoctoral fellow under Dr. Shilpa Sant, Department of Pharmaceutical Sciences, from May, 2015 to April, 2016. During this period, I developed cerium oxide

nanoparticle based novel gene delivery system and also developed different shaped cerium oxide nanoparticle for immunotherapy application.

B. Positions and Honors

ACADEMIC

02/2009-07/2009	Senior Research Fellow, Centre Research in Nanoscience and Nanotechnology University of Calcutta, Kolkata, India
07/2009-07/2013	Senior Research Fellow, Rajiv Gandhi National Fellowship, University Grants Commissions, India
07/2013-10/2013	Postdoctoral Research Associate, Indian Institute of Science, Bangalore, India
11/2013-04/2015	Postdoctoral Fellow, Dr. D. S. Kothari Postdoctoral Fellowship, University Grants Commissions, India
05/2015- 04/2016	Postdoctoral Fellow, School of Pharmacy, University of Pittsburgh, USA
06/2016- Present	Assistant Professor, Department of Polymer Science & Technology, University of Calcutta, India.

Awards and Fellowships

03/2007	Graduate Aptitude Test Examination (GATE) in Chemistry, MHRD, India
02/2009-07/2009	Senior Research Fellowship, Centre Research in Nanoscience and Nanotechnology, University of Calcutta, Kolkata, India
07/2009-07/2013	Senior Research Fellowship, Rajiv Gandhi National Fellowship, University Grants Commissions, India
11/2013-04/2015	Dr. D. S. Kothari Postdoctoral Fellowship, University Grants Commissions, India

Reviewer and Editorial Board

2014-	Reviewer of Molecular Pharmaceutics, ACS Publications
2015-	Reviewer of Plos One, Public Library of Science
2015-	Reviewer of RSC Advances, Royal Society of Chemistry
2015-	Reviewer of Carbohydrate Polymers, Elsevier
2015-	Reviewer of Journal of Applied Polymer Science, Willey
2015-	Editorial Board Member of Journal of Gene Therapy, Avens Publishing Group

C. Selected Peer-reviewed Publications

(Total 31 publications: 23 journal articles, 2 book chapter, 1 patent, 5 published abstracts, h-index= 9, Total citations- 237; 4 Poster presentations, Total Impact Factor= 67.61) (Citations: [Google Scholar](#))

26. **Sarkar, K.;** Sansare, S.; Sant, V.; Sant, S. Antioxidant and ROS activity of cerium oxide nanoparticles- Effect of particle morphology. **2016 (Submitted)**
25. **Sarkar, K.;** Krishnan, H. V.; Sant, V.; Kumar, G. V.; Babu, K. S.; Sant, S. Functionalized Cerium Oxide Nanoparticle for Targeted Gene Delivery. **2016 (Submitted)**
24. **Sarkar, K.;** Xue, Y.; Sant, S. Host response to synthetic versus natural biomaterials. **2016 (Submitted, Book Chapter)**
23. Athira, K.S.; **Sarkar, K.;** Chatterjee, K. Synthesis, Degradation, Biocompatibility and Drug Release Studies of Bis-2-Hydroxy Ethyl Terephthalate-based Poly(Mannitol-Citric-Sebacate) Ester. *Journal of Modern Materials*. **2016**, 1, 9-16.
22. Kumar, S.; Raj, S.; **Sarkar, K.;** Chatterjee, K. Engineering a multi-biofunctional composite using poly(ethyleneimine) decorated graphene oxide for bone tissue regeneration. *Nanoscale*. **2016**, 8, 6820-6836 (Impact Factor- 7.394)
21. Manna, P. J.; **Sarkar, K.;** Mitra, T.; Chatterjee, A.; Gnanamani, A.; Chakraborti, G.; Kundu, P. P. Synthesis of carboxy methylated guar gum grafted polyethyleneimine copolymer as an efficient gene delivery vehicle. *RSC Advances*. **2016**, 6, 13730-13741. (Impact Factor- 3.84)
20. Banerjee, S. L.; Khamrai, M.; **Sarkar, K.;** Singha, N. K.; Kundu, P. P. Modified chitosan encapsulated core-shell Ag Nps for superior antimicrobial and anticancer activity. *International Journal of Biological Macromolecules*, **2016**, 85, 157-167. (Impact Factor- 2.858)
19. **Sarkar, K.;** Meka, S. R. K.; Madras, G.; Chatterjee, K. A self-assembling polycationic nanocarrier that exhibits exceptional gene transfection efficiency. *RSC Advances*. **2015**, 5, 91619-91632. (Impact Factor- 3.84)
18. **Sarkar, K.;** Madras, G., Chatterjee, K. Dendron conjugation to graphene oxide using click chemistry for efficient gene delivery. *RSC Advances*. **2015**, 5, 50196-50211. (Impact Factor- 3.84)
17. Elayaraja, K.; **Sarkar, K.;** Meka, S. R. K., Madras, G; Chatterjee, K. Copolyesters from Soybean Oil for use as Resorbable Biomaterials. *ACS Sustainable Chemistry & Engineering*. **2015**, 3, 880-891 (Cover Page) (Impact Factor- 4.642)
16. **Sarkar, K.;** Banerjee, S. L.; Kundu, P. P.; Madras, G.; Chatterjee, K. Biofunctionalized Surface-Modified Silver Nanoparticle for Gene Delivery. *Journal of Materials Chemistry B*. **2015**, 3, 5266-5276. (Impact Factor- 4.726)
15. **Sarkar, K.;** Madras, G., Chatterjee, K. Gelatin Conjugated Polyethyleneimine for Non-viral Gene Transfection. *Indian Patent Filed (9259/RQ-CHE/2014)*
14. **Sarkar, K.;** Meka, S. R. K.; Bagchi, A.; Krishna, S. H.; Ramachandra, S. G.; Madras, G.; Chatterjee, K. Polyester Derived from Recycled Poly(ethylene terephthalate) Waste for Regenerative Medicine. *RSC Advances*. **2014**, 4, 58805-58815. (Impact Factor- 3.84)
13. Mukhopadhyay, P.; **Sarkar, K.;** Bhattacharya, S.; Mishra, R.; Kundu, P. P. Efficient oral insulin delivery by dendronized chitosan. *In vitro* and *In vivo* studies. *RSC Advances*. **2014**, 4, 43890-43902. (Impact Factor- 3.84)

12. Mukhopadhyay, P.; **Sarkar, K.**; Kundu, P. P. Preparation of pH responsive N-succinyl chitosan-*graft*-polyacrylamide hydrogel for insulin delivery; In vivo study in diabetic animal model. *Carbohydrate Polymers*. **2014**, 112, 627-637. (Impact Factor- 4.074)
11. Mitra, P.; **Sarkar, K.**; Kundu, P. P. Carboxymethyl Chitosan modified Montmorillonite for Efficient Removal of Cationic Dye from Waste Water. *Defence Science Journal*. **2014**, 64, 198-208. (Impact Factor- 0.9)
10. **Sarkar, K.**; Kundu, P. P. PAMAM conjugated Chitosan through naphthalimide moiety for enhanced gene transfection efficiency. *Carbohydrate Polymers*. **2013**, 98, 495-504. (Impact Factor- 4.074)
9. **Sarkar, K.**; Chatterjee, A.; Chakraborti, G.; Kundu, P. P. Blood compatible N-maleyl chitosan-*graft*-PAMAM copolymer for enhanced gene transfection. *Carbohydrate Polymers*. **2013**, 98, 596-606. (Impact Factor- 4.074)
8. **Sarkar, K.**; Debnath, M.; Kundu, P. P. Preparation of low toxic fluorescent chitosan-*graft*-polyethyleneimine copolymer for gene carrier. *Carbohydrate Polymers*. **2013**, 92, 2048-2057. (Impact Factor- 4.074)
7. Mukhopadhyay, P.; **Sarkar, K.**; Chakraborty, M.; Bhattacharya, S.; Mishra, R.; Kundu, P. P. Oral insulin delivery by Self-assembled Chitosan Nanoparticles: In vitro and in vivo studies in diabetic animal model. *Material Science & Engineering C*. **2013**, 33, 376-382. (Impact Factor- 3.088)
6. Mukhopadhyay, P.; **Sarkar, K.**; Soam, S.; Kundu, P. P. Formulation of pH responsive carboxylethyl chitosan and alginate beads for oral delivery of insulin. *Journal of Applied Polymer Science*. **2013**, 129, 835-845. (Impact Factor- 1.6)
5. **Sarkar, K.**; Kundu, P. P. Preparation of Low Molecular Weight N-Maleated Chitosan-*graft*-PAMAM Copolymer for Enhanced DNA Complexation. *International Journal of Biological Macromolecules*. **2012**, 51, 859-867. (Impact Factor- 2.858)
4. **Sarkar, K.**; Banerjee, S. L.; Kundu, P. P. Removal of Anionic Dye in Acid Solution by Self Crosslinked Insoluble Dendronized Chitosan. *Hydrology Current Research*. **2012**, 3, 133. (Impact Factor- 0.9*)
3. **Sarkar, K.**; Debnath, M.; Kundu, P. P. Recyclable Crosslinked O-Carboxymethyl Chitosan for Removal of Cationic Dye from Aqueous Solutions. *Hydrology Current Research*. **2012**, 3, 138. (Impact Factor- 0.9*)
2. **Sarkar, K.**; Srivastava, R.; Chatterji, U.; Kundu, P. P. Evaluation of chitosan and their self-assembled nanoparticles with pDNA for the application in gene therapy. *Journal of Applied Polymer Science*. **2011**, 121, 2239-2249. (Impact Factor- 1.6)
1. Kundu, P. P.; **Sarkar, K.** Natural polymeric vectors in gene therapy. In S. Kalia, & L. Avérous (Eds.), *Biopolymers: Biomedical and Environmental Application* (pp. 575-604). New Jersey: John Wiley & Sons Inc. **2011**. (Book Chapter)

Poster/Oral presentation in Conference

1. **Sarkar, K.**; Kundu, P. P. Development of novel chitosan-*graft*-polyethyleneimine copolymer through naphthalimide moiety for efficient DNA delivery vehicle. (Poster) **A National Symposium on Polymer & Rubber Technology for 21st Century 2012**
2. **Sarkar, K.**; Kundu, P. P. Novel chitosan based non viral vector for efficient gene delivery to cervical cancer cell. (Poster). **3rd International Cancer Research Symposium 2012**. Abstract published on **Journal of Cell Communication and Signaling**.

3. **Sarkar, K.**; Meka, S.; Bagchi, A.; Krishna, S. H.; Ramachandra, S. G.; Madras, G.; Chatterjee, K. From Trash to Tissue: Novel Polyester Derived from Poly(ethylene terephthalate) Waste for Tissue Regeneration. **(Poster) *International symposium on Polymer Science and Technology (MACRO 2015)***.
4. **Sarkar, K.**; Madras, G.; Chatterjee, K. RGD-functionalized Chitosan Capped Silver Nanoparticles for Efficient Gene Delivery with Reduced Toxicity. **(Poster) *International Conference on Advancement in Polymeric Materials (APM-2015)***.
5. **Sarkar, K.**; Krishnan, H. V.; Sant, V.; Kumar, G. V.; Babu, K. S.; Sant, S. Folic acid conjugated amine functionalized cerium oxide nanoparticle for cancer targeted gene therapy. **(Oral) *World Biomaterial Congress (WBC-2016)***.