Curriculum Vitae
SUPRATIM GIRI,
Ph.D.

CURRENT POSITION: Assistant Professor - Grade I, Dept. of Chemistry, NIT Rourkela [Sep 2011 – present]

EDU C ATI ON

Post-Doctoral Fellow (Canada) May 2008 – June 2011
Institute of Biomaterials and Biomedical Engineering
University of Toronto
Research advisor: Prof. Warren C.W. Chan

Ph.D., Chemistry (USA) August 2002 - April 2008
Iowa State University
Research Advisor: Late Prof. Victor S.-Y. Lin
Thesis title: *"Mesoporous silica nanomaterials and magnetic nanoparticles based stimuli-responsive controlled-release delivery systems."*

M.Sc., Chemistry (India) August 2000 - May 2002
Indian Institute of Technology, Kanpur
Research Advisor: Prof R. N. Mukherjee

B.Sc. (Honours), Chemistry (India) August 1997 - July 2000
Presidency College Calcutta, (University of Calcutta)

PATENT

Torney, F. J; Wang, K.; Lin V. S. -Y.; Trewyn B. G.; **Giri, S.**, "Methods of using Capped Mesoporous Silicates." *US patent No*: US 8,647,644 B1 Dated Feb. 11, 2014.

PUBLICATIONS

1. P Verma, D Sarkar, P Rajput, MN Singh, R Sharma, **S Giri**.* Structural insights on Li+ doped P 6 crystals of upconverting NaYF 4: Yb 3+/M 3+(M 3+= Er 3+ or Tm 3+) through extensive synchrotron radiation-based X-ray probing, *CrystEngComm,* **2021,** *23***,** 8631. https://doi.org/10.1039/D1CE01253C

2. P Verma, D Sarkar, P Rajput, MN Singh, R Sharma, **S Giri**.* Local Disorder Affecting NIR-Upconverting White Light Emission Manifests in Lattice Strain, *J. Phys. Chem. C,* **2021,** *125***,** 21211. https://doi.org/10.1021/acs.jpcc.1c06480

3. S Dhal, K Pal, **S Giri.*** Transdermal delivery of gold nanoparticle by soybean oil-based oleogel under iontophoresis, *ACS Applied Bio Materials,* **2020,** *3***,** 7029. https://doi.org/10.1021/acsabm.0c00893

4. S Dhal, RR Gavara, K Pal, I Banerjee, M Mishra, **S Giri.*** Facile transdermal delivery of upconversion nanoparticle by iontophoresis-responsive magneto-upconversion oleogel, *Nano Express,* **2020,** *1*, 010012. https://doi.org/10.1088/2632-959X/ab81e1

5. S Dhal, P Verma, M Mishra, **S Giri.*** Oleogel-mediated Transdermal Delivery of White Emitting NaYF4 Conjugated with Rose Bengal for the Generation of Reactive Oxygen Species through NIR-Upconversion, *Colloids and Surfaces B: Biointerfaces,* **2020**, *190,* 110945. https://doi.org/10.1016/j.colsurfb.2020.110945

6. S Dhal, K Pal, I Banerjee, **S Giri**.* Upconversion nanoparticle incorporated oleogel as probable skin tissue imaging agent,
Chemical Engineering Journal, **2020***, 379,* 122272. https://doi.org/10.1016/j.cej.2019.122272

7. P Verma, D Sarkar, P Rajput, MN Singh, R Sharma, **S Giri**.* Synchrotron-based X-Ray analysis: Relating Compressive Lattice Strain with the Photoluminescence Intensity of Li+ Doped β-NaYF4:Yb3+/Ln3+ (Ln3+=Ho3+/Er3+/Tm3+) Upconversion Crystals, *Crystal Growth & Design,* **2020***, 20,* 468. https://doi.org/10.1021/acs.cgd.9b01426

8. B Kumar, A Murali, AB Bharath, **S Giri**.* Guar gum modified upconversion nanocomposites for colorectal cancer treatment through enzyme-responsive drug release and NIR-triggered photodynamic therapy, *Nanotechnology,* **2019***, 30,* 315102. https://doi.org/10.1088/1361-6528/ab116e

9. B Kumar, A Murali, I Mattan, **S Giri**.* Near-Infrared-Triggered Photodynamic, Photothermal, and on Demand Chemotherapy by Multifunctional Upconversion Nanocomposite,*The Journal of Physical Chemistry B,* **2019***, 123,* 3738. https://doi.org/10.1021/acs.jpcb.9b01870

10. B Kumar, A Murali, **S Giri**.* Upconversion Nanoplatform for FRET-Based Sensing of Dopamine and pH, *Chemistry Select,*
2019*, 4,* 5407. https:// doi.org/10.1002/slct.201803966

11. B Kumar, VSS Rathnam, S Kundu, N Saxena, I Banerjee, **S Giri**.* White-light-emitting $NaYF_4$ Nanoplatform for NIR

Upconversion-mediated Photodynamic Therapy and Bioimaging, *ChemNanoMat,* **2018***, 4,* 583. https://doi.org/10.1002/cnma.201800096

12. B Kumar, S Kulanthaivel, A Mondal, S Mishra, B Banerjee, A Bhaumik,I Banerjee, **S Giri**.* Mesoporous silica nanoparticle based enzyme responsive system for colon specific drug delivery through guar gum capping, *Colloids and Surfaces B: Biointerfaces,* **2017***,150,*352. https:// doi.org/10.1016/j.colsurfb.2016.10.049

13. S Dhal, A Mohanty, I Yadav, K Uvanesh, S Kulanthaivel, I Banerjee, K Pal, **S Giri**.* Magnetic nanoparticle incorporated oleogel as iontophoretic drug delivery system, *Colloids and Surfaces B: Biointerfaces,* **2017***, 157,* 118. https:// doi.org/10.1016/j.colsurfb.2017.05.061

14. D Gaur, Y Yogalakshmi, S Kulanthaivel, T Agarwal, D Mukherjee, A Prince, A Tiwari, TK Maiti, K Pal, **S Giri**, M Saleem, I Banerjee.* Osteoblast-Derived Giant Plasma Membrane Vesicles Induce Osteogenic Differentiation of Human Mesenchymal Stem Cells, *Advanced Biosystems*, **2018**, *2*, 1800093. https://doi.org/10.1002/adbi.201800093

15. S Kulanthaivel, VS Sharan Rathnam, T Agarwal, S Pradhan, Kunal Pal, **S Giri,** TK Maiti, I Banerjee*, Gum tragacanth–alginate beads as proangiogenic–osteogenic cell encapsulation systems for bone tissue engineering, *Journal of Materials Chemistry B,* **2017**, *5*, 4177-4189. https://doi.org/10.1039/C7TB00390K

16. T Agarwal, P Kabiraj, GH Narayana, S Kulanthaivel, U Kasiviswanathan, K Pal, **S Giri,** TK Maiti, I Banerjee*, Alginate Bead Based Hexagonal Close Packed 3D Implant for Bone Tissue Engineering, *ACS Applied Materials and Interfaces,* **2016**, *8*, 32132-32145. https://doi.org/10.1021/acsami.6b08512

17. T Agarwal, R Narayan, S Maji, S Behera, S Kulanthaivel, **S Giri,** TK Maiti, Indranil Banerjee, K Pal*, Gelatin/Carboxymethyl chitosan based scaffolds for dermal tissue engineering applications, *International journal of biological macromolecules*, **2016,** *93*, 1499-1506. https://doi.org/10.1016/j.ijbiomac.2016.04.028

18. VK Singh, I Yadav, S Kulanthaivel, B Roy, **S Giri,** TK Maiti, I Banerjee, K Pal*, Groundnut oil based emulsion gels for passive and iontophoretic delivery of therapeutics, *Designed Monomers and Polymers,* **2016**, *17*, 297-308. https://doi.org/10.1080/15685551.2016.1152540

19. P Gupta, GH Narayana SN, U Kasiviswanathan, T Agarwal, K Senthilguru, D Mukhopadhyay, K Pal, **S Giri,** TK Maiti, I Banerjee*, Substrate stiffness does affect the fate of human keratinocytes, *RSC Advances*, **2016**, *6*, 3539-3551. https://doi.org/10.1039/C5RA19947F

20. S Kulanthaivel, B Roy, T Agarwal, **S Giri,** K Pramanik, K Pal, SS Ray, TK Maiti, I Banerjee*. Cobalt doped proangiogenic hydroxyapatite for bone tissue engineering application, *Materials Science and Engineering: C*, **2016**, *58*, 648-658. https://doi.org/10.1016/j.msec.2015.08.052

21. S Kulanthaivel, U Mishra, T Agarwal, **S Giri**, K Pal, K Pramanik, I Banerjee*. Improving the osteogenic and angiogenic properties of synthetic hydroxyapatite by dual doping of bivalent cobalt and magnesium ion. *Ceramics International,* **2015**, *41*, 11323-11333. https://doi.org/10.1016/j.ceramint.2015.05.090

22. BA Priya, K Senthilguru, T Agarwal, SNGH Narayana, **S Giri,** K Pramanik, K Pal, I Banerjee*. Nickel doped nanohydroxyapatite: vascular endothelial growth factor inducing biomaterial for bone tissue engineering. *RSC Advances*, **2015**, 5 (89), 72515-72528. https://doi.org/10.1039/C5RA09560C

23. T Agarwal, GH Narayana, K Pal, K. Pramanik, K., **S. Giri,** I Banerjee*. Calcium alginate - carboxymethyl cellulose beads for colon targeted drug delivery. *International journal of Biological Macromolecule,* **2015**, *75*, 409-417. https://doi.org/10.1016/j.ijbiomac.2014.12.052

24. **S Giri.** Nanotoxicity: aspects and concerns in biological systems. Book Chapter in *Microbial degradation and bioremediation, edited by S. Das.* Elsevier. **2014**, *ISBN 978-0-12-800021-2*. https://doi.org/10.1016/B978-0-12-800021-2.00003-0

25. **S Giri,** D Lee, WC Chan*. Engineering multifunctional magnetic-quantum dot barcodes by flow focusing. *Chem. Commun.* **2011,** *47,* 4195-4197. https://doi.org/10.1039/C0CC05336H

26. **S Giri,** EA Sykes, TL Jennings, WC Chan*. Rapid screening of genetic biomarkers of infectious agents using quantum dot barcodes." *ACS Nano,* **2011**, *5,* 1580-1587. https://doi.org/10.1021/nn102873w

27. TS Hauck, **S Giri,** YL Gao, WC Chan*. Nanotechnology diagnostics for infectious diseases prevalent in developing countries. *Adv. Drug Deliv. Rev.* **2010,** *62,* 438-448. https://doi.org/10.1016/j.addr.2009.11.015

28. II Slowing, BG Trewyn, **S Giri,** VSY Lin*. Mesoporous silica nanoparticles for drug delivery and biosensing applications. *Adv. Funct. Mat.* **2007**, *17*, 1225-1236. https://doi.org/10.1002/adfm.200601191

29. BG Trewyn, II Slowing, **S Giri,** HT Chen, VSY Lin*. Synthesis and Functionalization of a Mesoporous Silica Nanoparticle Based on the Sol-Gel Process and Applications in Controlled Release. *Acc. Chem. Res.* **2007**, *40,* 846-853. https://doi.org/10.1021/ar600032u

30. BG Trewyn, **S Giri,** II Slowing, VSY Lin*. Mesoporous silica nanoparticle based controlled release, drug delivery, and biosensor systems. *Chem. Commun.* **2007**, *31*, 3236-3245. https://doi.org/10.1039/B701744H

31. **S Giri,** BG Trewyn, VSY Lin*. Mesoporous silica nanomaterial-based biotechnological and biomedical delivery systems. *Nanomedicine*, **2007**, *2,* 99-111. https://doi.org/10.2217/17435889.2.1.99

32. SW Hong, **S Giri,** VSY Lin, Z Lin*. Simple Route to Gradient Concentric Metal and Metal Oxide Rings. *Chem. Mater.*, **2006**, *18,* 5164-5166. https://doi.org/10.1021/cm0618805

33. **S Giri.** BG Trewyn, MP Stellmaker, VSY Lin*. Stimuli-responsive controlled-release delivery system based on mesoporous silica nanorods capped with magnetic nanoparticles. *Angew. Chem. Int. Ed.* **2005**, *44*, 5038-5044. https://doi.org/10.1002/anie.200501819

DETAILS OF PHD THESIS SUPERVISION

Candidate	Thesis Title	Status	Comment
Balmiki Kumar, PhD	Development of Upconversion and Mesoporous Silica based Nanoparticle Systems for Therapeutic, Bioimaging and Bio-sensing Applications	PhD awarded on 19/03/2019	Currently pursuing Post Doctoral Fellowship in University of Toronto, Canada
Soumyashree Dhal, PhD	Development of Iontophoresis-Responsive Oleogels for Facile Delivery of Upconversion Nanoparticle and Drug across the Skin	PhD awarded on 20/08/2020	Pursued PhD under DST Women Scientist fellowship (2016-2019)
Ms. Preeti Verma	Lattice Strain in Li^+-Doped NIR-Upconverting Crystals: A Bridge between Photoluminescence Intensity and Local Disorder	PhD awarded on 27/04/2022	Received DST Women Scientist fellowship (2018-2021)
Ms. Amreeta Swain	*research work ongoing*	PhD thesis to be submitted in 2024	Senior Research Fellow
Mr. Panchanan Pandey	*research work ongoing*	PhD thesis to be submitted in 2025	Senior Research Fellow

SPONSORED PROJECTS

Title	Agency	Duration	Value
Upconversion nanoparticles for barcoding technology and drug delivery caps	DST-SERB	2014-2017	Rs 19,25,000
Cell based suspension array on magnetic upconversion barcodes (RGYI)	DBT	2013-2016	Rs 25,50,000
Optimisation of upconverted visible light emission through local disorder and lattice strain generated in core-shell based in NIR upconversion nano crystals.	UGC-DAE CSR	2022-2025	Rs 8,25,000