Dr. Sudhanshu Shekhar Pati

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Present Position

Assistant Professor in the department of Chemistry of National Institute of Technology (NIT), Jamshedpur.

Education

Doctorate in Chemistry	Indira Gandhi Centre for Atomic Research (IGCAR), Dept. of Atomic Energy, Kalpakkam, India (2014) **Thesis Supervisor:** Dr. John Philip, Scientist H, IGCAR *Professor-Homi Bhabha National Institute* **Thesis Title:** *"Synthesis and characterization of magnetic nanoparticles with enhanced thermal Stability".*
Master in Chemistry	Ravenshaw University, Odisha, India (2007)
Bachelor Degree in Science	Utkal University, Odisha, India (2005)
10+2 (Science)	Council of Higher Secondary Education, Odisha (2002)

Honors/Fellowship

Junior Research Fellowship	Department of Atomic Energy (D.A.E.), India (2008)
Junior Research Fellowship	Council of Scientific and Industrial Research, JRF (2009)
Post Doctoral Fellowship	University of Brasilia, Brazil (Aug, 2014)
Post Doctoral Fellowship	IIT, Kharagpur (Nov, 2015)

Research Interest

Nanomaterials Synthesis	Materials & Drug Delivery Mechanism	Nano Colloids
Nano Device Applications	Nanomaterials for Catalysis	Energy Materials
Structural Nanomaterials	Magnetism in Nanomaterials	Ferrofluids

Teaching Experience

Assistant Professor June 2018-Present	Department of Chemistry, National Institute of Technology (NIT), Jamshedpur, Jharkhand
Temporary Faculty August 2017-May 2018	Department of Chemistry, National Institute of Technology (NIT), Jamshedpur, Jharkhand
Adhoc Faculty August 2016-July 2017	Department of Chemistry, National Institute of Technology (NIT), Jamshedpur, Jharkhand

Post Doctoral Research Experience

Post Doctoral Fellow Nov 2015-July 2016	**Supervisors:** Prof. Rahul Mitra *Dept. of Metallurgical and Materials Engineering, IIT Kharagpur.* ***Project1***: Investigation of defects and phase transformations in alloy systems for high temperature applications (ASH).
Post Doctoral Fellow Aug 2014-July 2015	**Supervisors:** Prof. Vijayendra K Garg & Prof. A C Oliveira *University of Brasilia, Brasilia, DF, Brazil* ***Project1***: Synthesis of Ironoxide@Au core shell nanomaterials for targeted drug delivery. ***Project2***: Synthesis of ferrite nanoparticles with controlled size, morphology and magnetic properties. ***Project3*****:** Synthesis of Zeolite/$LiFePO_4$ nanocomposites.

PhD Students Supervised

Sl No.	Name	Status	Year
1.	Mr. Pranaykant Prasad	Ongoing	2018
2.	Mr. Arvind Tiwary	Ongoing	2019
3.	Ms. Shivangini Singh	Ongoing	2021

Master's Project Supervised

Sl No.	Name	Project Title	Status	Year
4.	Mr. Joshobant Seth	Thermal stability of magnetic nanoparticles	Completed	2017
5.	Ms. Preeti Rani	Magnetic nanoparticles for bio-applications	Completed	2018
6.	Mr. Srikant Kumar Sethi	Temperature dependence physical properties of fe_3o_4 nanoparticles	Completed	2018
7.	Mr. Kori Santosh Kumar	Thermal properties of core-shell nanoparticles	Completed	2018
8.	Mr. Anik Ghosh	Nanoparticles in drug delivery	Completed	2019
9.	Ms. Rupali Behera	A review on material development for energy storage	Completed	2019
10.	Mr. Sagar Tipne	Optimisation of dry film thickness of cathodic electro deposition process in automobile paint shop	Completed	2019

11.	Ms. Neha Kumari	Recent progress in anode material for na-ion batteries	Completed	2020
12.	Ms. Anupama Raul	A review on recent progress in synthesis, properties and biomedical applications of magnetic nanoparticles	Completed	2020
13.	Mr. Sourabh Jha	Self-healing coating by sol-gel process on aluminum alloy(aa2014)	Completed	2020
14.	Mr. Pradyumna Pradhan	Magnetic nanoparticles	Completed	2021
15.	Ms. Ipsita Mohanty	Commercial and scientific advancements in na-ion battery anode materials	Completed	2021
16.	Ms. Priyanka KUmari	Graphene aerogels for efficient energy storage in supercapacitors and lithium-ion batteries	Completed	2021
17.	Ms. Leenia Mukhopadhyaya	Synthesis of functionalized magnetic nanoparticles for water treatment	Ongoing	
18.	Ms. Sonam Khatei	Review of sodium and lithium-ion batteries	Ongoing	
19.	Ms. Nitish Nayak	Review on functionalized nanomaterials for bio-medical applications	Ongoing	
20.	Ms. Deepali Sahu	Review of pickering emulsion	Ongoing	

Publications in International Refereed Journals

1 Irfan Khan, Kazuhiko Akiyama, Akiko Inagaki, Ahmad Salah Ali, Ernő Kuzmann, Zoltán Homonnay, Katalin Sinkó, Nina Popov, **Shudhanshu Shekhar Pati** and Shiro Kubuki, Photocatalytic degradation of organic dyes and phenol by ironsilicate glass prepared by sol-gel method, New Journal of Chemistry, 2021 (Just Accepted)

2 *Ningthoujam Joseph Singh, Boris Wareppam, Subrata Ghosh, B Prasad Sahu, PK Ajikumar, Premjit Singh, Soumee Chakraborty, **Sudhanshu S Pati,** Aderbal Carlos de Oliveira, Suelen Barg, Vijayendra Garg, Herojit Singh Loushambam Alkali-cation incorporated and functionalized iron oxide nanoparticles for methyl blue removal/decomposition 2020 Nanotechnology 31 425703*

3 N Joseph Singh, L Herojit Singh, SS Pati, JAH Coaquira, AC Oliveira, Junhu Wang, VK Garg; Effect of Li insertion in the crystal structure and magnetism of barbosalite prepared using solvothermal method; *Materials Chemistry and Physics* Volume 240, 15 January 2020, 122133

4 *T. Muthukumaran, **S. S. Pati**, L. H. Singh, A. C. de Oliveira, V. K. Garg, John Philip, Comparison of magnetic properties and high-temperature phase stability of phosphate- and oleic acid-capped iron oxide nanoparticle,Applied Nanoscience,2018 593-608*

5 *L. Herojit Singh, **Sudhanshu S Pati,;*** Joseph S Ningthoujam,; Jose A H. Coaquira,; Aderbal C Oliveira,; Vijayendra K Garg,; Junhu Wang, Li Effect on the Structural Transitions of Barbosalite to LiFePO4 and its Magnetism, *Journal of Solid State Chemistry (Under Review)*

6 *L. Herojit Singh, **Sudhanshu S. Pati**, A. C. Oliveira, Vijayendra K Garg,and Erno Kuzmann, Thermal-induced magnetic transition in $CoFe_2O_4$@ZnO, Journal of Applied Physics 122, 143901 (2017).*

7 *E. Kuzmann · E. Csapó · S. Stichleutner · V.K. Garg · A.C. de Oliveira · S.W. da Silva · L.H. Singh · **S.S. Pati** · E.M. Guimaraes · A. Lengyel · I. Dékány · K. Lázár, Fine structure of gold nanoparticles stabilized by buthyldithiol: Species identified by Mössbauer spectroscopy, Colloids and Surfaces A Physicochemical and Engineering Aspects , 504, 260-266 (2016).*

8 ***Sudhanshu S. Pati****, L. Herojit Singh, E.M. Guimarães, John Mantilla, J.A.H. Coaquira, A.C. Oliveira, Virender K. Sharma, Vijayendra K. Garg, Magnetic Chitosan Functionalized Fe3O4@Au Nanoparticles: Synthesis and Characterization, Journal of Alloys and Compounds,* 684 (2016): 68-74.

9 *L. Herojit Singh, **Sudhanshu S. Pati**, J.A.H. Coaquira, John Matilla, Edi M. Guimarães, A.C. Oliveira, E. Kuzmann, Vijayendra K. Garg, Magnetic interactions in cubic iron oxide magnetic nanoparticle bound to zeolite, Journal of Magnetism and Magnetic Materials,* 416 (2016): 98-102.

10 *L. Herojit Singh, **S.S. Pati**, Edi M. Guimaraes, P.A.M. Rodrigues, Aderbal C. Oliveira, V.K. Garg Synthesis, structure, morphology and stoichiometry characterization of cluster and nano magnetite, Materials Chemistry and Physics, 178, 182-189 (2016).*

11 *E Kuzmann, VK Garg, AC de Oliveira, L Herojit Singh, **S. S. Pati**, EM Guimaraes, Tatiane O dos Santos, M Ádok-Sipiczki, P Sipos, I Pálinkó,* Mössbauer, XRD and TEM Study on the Intercalation and the Release of Drugs in/from Layered Double Hydroxides, Croatica Chemica Acta, 88, 1-8 (2015).

12 ***S. S. Pati,** L. Herojit Singh, A. C. Oliveira and V K Garg, Chitosan Functionalized Fe3O4@Au Core-Shell Nanomaterials for Targeted Drug Delivery, World Academy of Science, Engineering and Technology 9 (6), 401-404 (2015).*

13 L. Herojit Singh, ***S. S. Pati,*** E. M. Guimaraesa, M. J. A. Sales, A. C. Oliveira and V. K. Garg*, "Facile method to tune the particle size and thermal stability of magnetite nanoparticles", J Brazilian Chemical Society, 26,* 2214-2223 (2015).

14 ***S. S. Pati****,* L. Herojit Singh, J. C. Mantilla Ochoa, E. M. Guimaraesa, M. J. A. Sales, J. A. H. Coaquira, A. C. Oliveira and V. K. Garg*,* Facile approach to suppress γ-Fe_2O_3 to α-Fe_2O_3 Phase Transition beyond 600˚C in Fe_3O_4 Nanoparticles, *Mater. Res. Express, 2, 045003 (2015).*

15 ***S. S. Pati****,* S Kalyani and John Philip, Microwave assisted synthesis of ferrite nanoparticles and nanofluids with tunable Curie temperature *J. Nanofluids 3, 210 (2014).*

16 ***S. S. Pati,*** S. Kalyani, V. Mahendran, John Philip, Microwave assisted synthesis of magnetite nanoparticles *J. Nanoscience and Nanotechnology, 14, 5790-5797 (2014).*

17 ***S. S. Pati*** and John Philip, Effect of cation trapping on thermal stability of fe_3o_4 nanoparticles, *J. Nanoscience and Nanotechnology, 14, 4114-23 (2014).*

18 L Herojit Singh, ***S. S Pati,*** A. C. Oliveira and V. K. Garg, Mössbauer study of stability and growth confinement of magnetic Fe_3o_4 drug carrier, *Hyperfine Interactions (2014).*

19 ***S. S. Pati****,* V. Mahendran, J. Philip, A simple approach to produce stable ferrofluids without surfactants and with high temperature stability, *J. Nanofluids, 2, 94 (2013).*

20 ***S. S. Pati****,* J. Philip, A facile approach to enhance the high temperature stability of magnetite nanoparticles with improved magnetic property, *J. Appl. Phys. 113, 044314 (2013).*

21 ***S. S. Pati,*** S. Gopinath, G. Panneerselvam, M. P. Antony, J. Philip, High temperature phase transformation studies in magnetite nanoparticles doped with Co(II) ion, *J. Appl. Phys. 112, 054320 (2012).*

Conferences and Workshops

1 *L. Herojit Singh**, S. S. Pati,** A. C. Oliveira, V. K Garg and Junhu Wang,* Dehydration induced magnetism in Li doped barbosalite, ICAME,Petersburg, Russia, 3-8 September, 2017.

2 E. Kuzmann , V.K. Garg , A. C. de Oliveira , L. Herojit Singh, ***S.S. Pati ,*** M. Guimaraes , T.O. dos Santos, M. Ádok-Sipiczki, P. Sipos and I. Palinkó, "Mössbauer, XRD and TEM study on the

intercalation and the release of drugs in/from layered double hydroxides", MECAME, Croatia, 2015.

2 ***S S Pati,*** L Herojit Singh, A C Oliviera and V K Garg, Template Assistes Synthesis of Magnetic Nanoparticles with Confined Morphology, Feb 4-6, 2015, Oral presentation, International Conference on Nanoscience and Nanotechnology (ICONN 2015), SRM University, Chennai, India.

3 ***S S Pati,*** L Herojit Singh, A C Oliviera and V K Garg, Synthesis of Zeolite- Fe_3O_4 Nano Composites for Biomedical Applications, Feb 19-22, 2015, Oral presentation,2nd International Confrence on Nanotechnology, Haldia Institute of Technology, Haldia, West Bengal, India.

4 L Herojit Singh, ***S. S. Pati***, A. C. Oliveira and V. K. Garg, Mössbauer Study Of Stability And Growth Confinement Of Magnetic Fe_3o_4 Drug Carrier, Nov 10-14, 2014, Oral presentation, XIVth Latin American Conference on the Applications of the Mössbauer Effect – LACAME, Toluca, Mexico.

5 ***S S Pati,*** L Herojit Singh, A C Oliviera and V K Garg, Template Assisted Method to Synthesize Superparamagnetic Magnetite Nanoparticles with Confined Morphology, Oct 27-31 2014, Poster Presentation, III Encontro de Fisica do Centro-Oeste, Cuiaba, Brazil.

6 L. Herojit singh, ***S. S. Pati,*** A. C. Oliveria and V. K. Garg, Investigações Mössbauer da dessorção de hidrogênio e hidroxila de nanopartículas de óxido de ferro, Oct 27-31 2014, Poster Presentation, III Encontro de Fisica do Centro-Oeste, Cuiaba, Brazil.

7 ***S. S. Pati*** *and John Philip,* Enhancement in maghemite to hematite phase transition temperature with very low fraction of Co(II) doping, ICONSET, Nov 27-30 2011, Sathyabhama University, Chennai.

8 Conference on Chemistry in Societal and Environmental needs Chennai, August 29-31, 2011.

9 Conferences on Electron Microscopy, 12 and 13 Oct 2009, IIM Kalpakkam.

10 *L.H. Singh, S. S. Pati, A. C. Oliveira and V. K. Garg*, Li effect on structural transformation of Barbosalite, International Conference on Advances in Functional Materials, 6-8 Jan, 2017, Anna University.