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2. Designation & Present Institution: Scientist-D

Centre for Nanoscience & Nanotechnology

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7. Brief account of your research interests with special focus on Nano Science and Technology (strictly within 300 words):

Synthesis of Multiwalled Carbon nanotubes by CVD method and preparation of polymer based nanocomposites from multiwalled carbon nanotubes.

Polymer based CNT based composites have been done using different methods and mechanical, electrical and morphological characterizations have shown enhanced properties.

I am presently working on the anti fouling characteristics of the nano coatings of polymers.

Key Words: CNTs/ polymer/ antifouling

Publication details and other overview

Journal Publications

1. Carbon Nanotube Reinforced Composites – A state of the art: **S S Samal** & S Bal, Bull. Mater. Sci., Vol. 30, No. 4, August 2007, pp. 379–386.
2. Effect of Mechanical Properties on Fracture Surfaces of Carbon Nanotube Composites Pre-treated at Different Temperatures, S. Bal, **S.S Samal** and U.K.Mohanty, *NICE Journal of Emerging Technologies*, ISSN No.: **0973-2993**, vol-3, no.1, June 2008.

3. Carbon Nanotube reinforced Ceramic Matrix Composites: A review- **Subhranshu Sekhar Samal** & S. Bal- *Journal of Minerals & Materials Characterization & Engineering*, Vol. 7, No.4, pp 355-370, 200
4. Role of Temperature and Carbon Nanotube Reinforcement on Epoxy based Nanocomposites - **Subhranshu Sekhar Samal**, *JMMCE*, USA Vol. 8 No. 1 2009, pp 25-36.
5. Nanoscience & Nanotechnology Education & Research Opportunities in India - **Subhranshu Sekhar Samal** Name of book: Socio-Economic Development: Challenges before women scientists, technologists and engineers, 13-15 february, 2009 **ISBN No: 93-80043-03-1**, pp 35-39 Publisher: Excel India Publishers, New Delhi- 110067
6. Safety and Risk Associated with Nanoparticles- A Review, Vinita Vishwakarma, **Subhranshu Sekhar Samal** and N. Manoharan, *Journal of Minerals & Materials Characterization & Engineering*, Vol. 9: 5,455-459, 2010.
7. Sonochemical Coating of Ag-TiO₂ Nanoparticles on Textile Fabrics for Stain Repellency and Self-Cleaning- The Indian Scenario: A Review, **Subhranshu Sekhar Samal**, P. Jeyaraman and Vinita Vishwakarma, *Journal of Minerals & Materials Characterization & Engineering*, Vol. 9: 6, pp.519-525, 2010
8. "Factors affecting the power consumption in a CNTFET logic gate " – Greeni Navin & S S Samal , *Journal of ECCSA*, Vol-2 , Issue2 (April-2011), pg 138-141, **ISSN: 0975-5098**
9. Polymeric Materials for Electromagnetic Interference Shielding- S S Samal & Manoj Lanka, *Journal of ECCSA*, October, 2011
10. Mechanical and Microstructural Analysis of Carbon nanotube Composites Pretreated at Different Temperatures - S Bal, S S Samal & U K Mohanty, and *American Journal of Materials Science*. 2011; 1(1): 5-11 (DOI: 10. 5923/j.materials.20110101.02).

Conferences publications:

International Conferences:

1. *Carbon Nanotube Reinforced Polymer Composite* – S.Bal & **S.S Samal**, , Eighth International Conference on Nanostructured Materials (Nano 2006), Department of Metallurgy, IISc, Bangalore-560012 , August 20-25 2006.
2. *Effect of process parameters on the mechanical & electrical properties of the multiwalled carbon nanotube based polymer composites post cured at different environmental conditions-* **Subhranshu S. Samal** & S Bal, ICONSAT-2008 (Feb.17-29), Chennai.
3. *Effect of Temperature on Mechanical & Micro Structural Properties of Fracture Surfaces of Carbon Nanotube Reinforced Polymer Composites-* **Subhranshu S. Samal** & S Bal, Bangalore Nano-2007 (Dec 6-7)
4. *Carbon Nanotube Reinforced Ceramic Matrix Composites-* **S S Samal**, S Bal & N.Manoharan, International Workshop on Microscopic, Nanoscopic and Mesoscopic Materials (IWMNM-2008), (Jan 2-4).
5. *Effect of Process Parameters on The Mechanical & Electrical Properties of The Multiwalled Carbon Nanotube Based Polymer Composites Treated at Different Conditions-* **Subhranshu S. Samal** & S Bal, IndoSwiss Bonding (2008), International symposium on Bonding & Adhesions (Feb 14 -16), MIT , Anna university, Chennai .
6. *Effect of Temperature on Mechanical & Micro Structural Properties of Fracture Surfaces of Carbon Nanotube Reinforced Polymer Composites-* **Subhranshu S. Samal** & S Bal, Bangalore Nano-2007 (Dec 6-7)
7. Study of Mechanical and Morphological Properties of Aligned and Randomly Oriented Carbon Nanotube Composites- **Subhranshu Sekhar Samal**, N Manoharan & Smrutisikha Bal, 14-15 Nov 2008 International Conference on Emerging Scenarios in Space Technology & Applications-2008(ESSTA-2008)
8. Study of Mechanical and Morphological Properties of Aligned and Randomly Oriented Carbon Nanotube Composites- **Subhranshu Sekhar Samal**, N Manoharan

& Smrutisikha Bal , 2nd *Bangalore Nano, December 11 – 13, 2008, The Grand Ashok, Bangalore, India, pp.64*

9. Comparative studies on the physical Properties of Aligned and Randomly Oriented Carbon Nanotube Reinforced Polymer Composites at different Temperatures- **Subhranshu Sekhar Samal**, *FIRST ASIAN CARBON CONFERENCE (FACC 2009)* www.facc2009.org, 25th – 27th November 2009, Indian Habitat Center, New Delhi, India, pp 90 .
10. Green Technology in Construction- Somshekhar Mohanty & S S Samal, International Conference on Recent Advances in Space Technology Applications & Climate Change (RSTS & CC-2010) organized in association with ISRO & IEEE from 13-15th Novemeber, 2010, Sathayabama university, Chennai (Published in IEEE Xplorer), **ISBN: 978-1-4244-9183-4**
11. The reinforcement role of Carbon nanofibres of Acrylo-Nitrile Butadine Styrene (ABS)/PolyCarbonate(PC) carbon nanofibre composites for Electromagnetic Interference Shielding Applications”, Subhranshu S. Samal & S Sathyamurthy, in International Conference on Electromagnetic Interference & Compatibility (INCEMIC 2010) held at NIMHANS, Bangalore,25- 26th November 2010.pg. 149-153, **ISBN: 81-963575-2-2**
12. Design and analysis of conveyor chain for automatic ammunition loading machine- Wribhu, Atirek; Siddiqui, Md. Sanauallah; Samal, Subhranshu Sekhar; Sathyamurthy, S, page: 239 -240, **ISBN: 978-1-4244-9004-2** (Digital Object Identifier:[10.1109/INTERACT.2010.5706147](https://doi.org/10.1109/INTERACT.2010.5706147)), IEEE Xplorer, 3rd to 5th Decemeber, 2010 in association with IEEE & DRDO at Sathyabama university, Chennai
13. Selection of materials for the design and development of electromechanical rotary joints- Skandhaprasaad, A. L.; Samal, Subhranshu Sekhar; Sathyamurthy, S, page: 250 -253, **ISBN: 978-1-4244-9004-2** (Digital Object Identifier: [10.1109/INTERACT.2010.5706150](https://doi.org/10.1109/INTERACT.2010.5706150)), IEEE Xplorer, 3rd to 5th Decemeber, 2010 in association with IEEE & DRDO at Sathyabama university, Chennai
14. Futuristic humanoid robot of twenty first century- Mohanty, Somshekhar; Samal, Subhranshu Sekhar; Sathyamurthy, S, Page: 185-188, **ISBN: 978-1-4244-9004-2**

(Digital Object Identifier: [10.1109/INTERACT.2010.5706223](https://doi.org/10.1109/INTERACT.2010.5706223)), IEEE Xplorer, 3rd to 5th Decemeber, 2010 in association with IEEE & DRDO at Sathyabama university, Chennai

15. Nanophase modification of concrete for enhancement of microbial properties and durability: present status and future scope- Ramachandran, Vinita, S S Samal, International conference on nanoscience, engineering & technology (28th to 30th november, 2011), IEEE xplore, pp 732-734

National Conferences:

16. *Polymeric Nanocomposites : An advanced material*- S. Bal and **S.S Samal**, Recent Advances in Physics, Dalmia college, Rajgangpur Feb. 4-5, 2006.
17. *Influence of Dispersion States of Carbon Nanotubes on Mechanical Properties of Epoxy Nanocomposites* – S. Bal and **S.S. Samal**, Recent Trends in Mechatronics Nanotechnology and Robotics April' 14 2006, NIT Rourkela..
18. *Single Walled Carbon Nanotube For Hydrogen Storage* – A review, **S.S.Samal** and B. Mishra, Recent Trends in Mechatronics Nanotechnology and Robotics, RTMNR 2006, 15-16 Apr-2006, NIT Rourkela.
19. *Sonicated low volume fraction Carbon Nanotube Reinforced Epoxy nanocomposites and the role of dispersion on its mechanical properties* -Smrutisikha Bal & **Subhranshu Sekhar Samal**, National Review and coordination meeting on Nanoscience and Nanotechnology, ARCI Hyderabad -feb'21-23'2007.pp 226
20. Effect of Temperature and Carbon Nanotube Reinforcement on Epoxy based Nanocomposites- **S S Samal** & S Bal , Orissa Bigyan Congress (ISCA, Bhubaneswar Chapter, India) organized by OES, Dec 23-24' 2008
21. Antimicrobial effects of carbon nanotubes synthesized from soot - **S S Samal** & Vinita Vishwakarma, National conference on Antimicrobial Resistance: From Emrging Threat to Reality (Environmental Aspects on Antimicrobial Resistance), 23-25 March-2009, AAI , Allahabad
22. *Investigation of Microbiological aspects of Biodegradation/Bio deterioration of concrete by sulphur oxidizing Bacteria/Fungi*- R.P George, Vinita Vishwakarma, **S S**

- Samal**, N Manoharan, 12th orissa Bigyan Congress, Bhubaneswar (Dec 5-6/2009), pp 159
23. *Fabrication and Callibration of 3 axis magnetic probe using linear Hall effect sensors (HAL-401)* for measurement of magnetic field in SST-1 Tokamak, **S S Samal** & Amit Sircar, 12th orissa Bigyan Congress, Bhubaneswar (Dec 5-6/2009), pp 144
24. *Study of Antibacterial effects of MWNTS synthesized by CVD method-* **S S Samal** & V Vishwakarma, National conference of interplay of Biologiocal & Chemical Sciences (NCIBCS-2010) , Jan 6-8, 2010 , Thiruvalluvar University, Vellore , 107 pp
25. Hybrid metal matrix composite materials: experimental issues and environmental concerns- T. Sasimurugan , **Subhranshu Sekhar Samal**, Proceedings of National conference Trends in Renewable Energy, Sources , Applications & Climate Change (TRESAC-2010), Sathyabama University sponsored by MoES, New Delhi, 23-25 July,2010, PP. 45
26. Eco-friendly concrete-D.Ramachandran, Vinita Vishwakarma, and **Subhranshu Sekhar Samal**- Proceedings of National conference Trends in Renewable Energy, Sources , Applications & Climate Change (TRESAC-2010), Sathyabama University sponsored by MoES, New Delhi, 23-25 July,2010, PP. 66
27. Microbially induced deterioration of concrete- D.Ramachandran, Vinita Vishwakarma, **Subhranshu Sekhar Samal**, R.P.George,P.Muraleedharan and R.K.Dayal, Proceedings of National conference Trends in Renewable Energy, Sources , Applications & Climate Change (TRESAC-2010), Sathyabama University sponsored by MoES, New Delhi, 23-25 July,2010, PP. 70
28. Green Technology- S Mohanty & S S Samal, 13th orissa Bigyan Congress, RMNH,BBSR ISCA Bhubaneswar Chapter.(2010)

Book Chapters:

- Authored a chapter on “Future Trends in Humanoid Robots” for the book entitled “Elements of Robotics Systems” edited by Dr. S Sathyamurthy (DRDO) by SAMS publisher, Chennai (2011)

- Authored a chapter on “Environmental Toxicity of Nanoparticles in Biological Systems: Ethical Issues, Laws and Challenges” for the *Book entitled “Nanotechnology in Biology and Medicine”*. (under Process- corrections carried out)
- Carbon fiber reinforced ceramic matrix composites communicated to Encyclopedia of Composites by Wiley. (Accepted to be published in April, 2012 issue)

Awards & Achievements:

1. I have presented a paper entitled “ Plasma diagnostic using HALL sensor ICs in SST-1 TOKAMAK” in the national level technical symposium confluence 2k6 organized by N.I.T Rourkela and secured **First Position** .
2. I have presented a paper entitled “Shape memory alloy” in the ceramic engineering department in confluence 2k6 of N.I.T Rourkela and secured **Second Position**.
3. I have presented one paper entitled “Plasma for healthy Environment” in Minerva 2k6 in the technical festival organized by mining Engineering Department of N.I.T Rourkela & secured **Second Position**.
4. I got the **Vandana Chowdhury Memorial Award 2002** from Stewart Sc. College, Cuttack for securing **highest** percentage marks in Physics Honours & scientific Activities in the College.
5. Invited as a speaker in International conference on Bonding & Adhesion (Indo-Swiss Bonding 2008) held in MIT, Chennai.
6. **Best paper award** in International conference on “Emerging Scenarios in Space Technology and Applications (**Advanced Materials and Reliability**) Organised by **ISRO**, Bangalore, 13-15 November, 2008
7. **Best paper award (Polymer Nano-Technology) in** Orissa Bigyan Congress (ISCA, Bhubaneswar Chapter, India) organized by OES, Dec 23-24’ 2008
8. **Best Paper award** for the paper entitled “Selection of materials for the design and development of electromechanical rotary joints” in **INTERACT-2010**, 3rd to 5th Decemeber, 2010 in association with IEEE & DRDO at Sathyabama University, Chennai

Memberships in Professional Bodies:

- Student member of Plasma Science Society of India (PSSI) -Membership **No SM-11**.
- Associate Member of Indian Institute of Metals (IIM)-Membership No. **AS 143041**
- **Life Member for Indian Science Congress Association, Kolkata.**

- **Life member of Electromagnetic Compatibility, Consulting Science Academy**
- **Listed in Marquis Who's Who for science and engineering 29th edition, 2012.**
- **Life Member Orissa Environmental Society**
- **Area editor of Materials Science & nanotechnology in Emerging Science.**
- **Life Member of ISCA, Bhubaneswar chapter**

Reviewers:

- Reviewer of Journal of Manufacturing Engineering (Society of Manufacturing Engineers).
- Reviewer for Scientia Nanotechnology Journal , IRAN
- Reviewer for African Journal of Biotechnology

Science Articles:

Written more than 12 science articles in Emerging Sciences, Electronics for You and Nanodigest.

Workshops Attended:

Attended more than 20 workshops in the area of materials science and nanotechnology including Indo- Swiss Bonding organized by MIT, Anna University in February, 2008

Conference Organized:

- 3 days National conference on Trends in Renewable Energy, Sources, Applications & Climate Change (TRESAC-2010) organized by Centre for Nanoscience & Nanotechnology, Sathyabama University in association with IGCAR, Kalpakkam sponsored by MoES, New Delhi, 23-25 July, 2010
- Co-ordinator for International Robotics Contest to be held on 3rd December, 2010 in association with DRDO, IEEE & SAE India Southern Section.
- Co-ordinator for international conferences RSTSCC-2010 (In association with ISRO), FAME-2010 (In association with SAE) & INTERACT-2010 (In association with DRDO).
- Technical committee member for ICONSET-2011 held from 28th to 30th November, 2011 at Sathyabama University in Association with IGCAR, Kalpakkam
- Advisory and technical committee member for TRESAT-2012(1-3, Feb, 2012) to be held in association with MoES, New Delhi