

## CURRICULUM VITAE

Name : Dr. Rashmi Ranjan Sahoo  
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Nationality : Indian  
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### RESEARCH INTEREST:

Nanotribology, Functionalized Nanostructured Materials, Nanolubrication, Composite Coatings, Waste Management, Water Technology

### ACADEMIC QUALIFICATIONS:

- ❖ **2015 – Present:** Principal Scientist, CSIR – CMERI, Durgapur, WB
- ❖ **2010 – 2015:** Senior Scientist, CSIR – CMERI, Durgapur, WB.
- ❖ **2005 – 2010:** Research Associate, Nanotribology Lab, Department of Mechanical Engineering, Indian Institute of Science, Bangalore.  
**Summary:** Nanotribological investigation of fatty acids self-assembled monolayers on steel substrate and solid lubricant nanoparticles as boundary lubricant additives in aqueous and non-aqueous suspensions.
- ❖ **1999 – 2004\*:** Research Scholar, Department of Chemistry, Indian Institute of Technology Madras.  
**\* August 2001 – October 2002:** Fellow of International Max-Planck Research School for Polymer Material Science (IMPRS-PMS) at Max-Planck Institute for Polymer Research at Mainz, Germany.  
**Title of Thesis:** Physicochemical interactions in surface functionalized C<sub>60</sub> terminated self-assembled monolayers and tritium encapsulated C<sub>60</sub>.

### LIST OF PUBLICATIONS:

#### Book Chapter

- (1) Sanjay K. Biswas and **Rashmi R. Sahoo** (2011) Tribology of MoS<sub>2</sub> nanoparticles in the ambient and in liquid suspension in "**Molybdenum: Characteristics, Production and Applications**" Ed. M. Ortiz and T. Herrera, Nova Publisher, NY.

#### Journals:

- 1) Suprakash Samanta, Rashmi. R. Sahoo (2020) Waste Cooking (Palm) Oil as an Economical Source of Biodiesel Production for Alternative Green Fuel and Efficient Lubricant, **BioEnergy Research**, <https://doi.org/10.1007/s12155-020-10162-3>
- 2) Bipin Kumar Singh, Suprakash Samanta, Shibendu Shekhar Roy, Rashmi. R. Sahoo, Himadri Roy, Nilrudra Mandal (2020) Evaluation of Mechanical and Frictional properties of CuO added in MgO-ZTA ceramics, **Materials Research Express**, 6 125208
- 3) Suprakash Samanta, Santosh Singh, Rashmi. R. Sahoo (2020) Lubrication of dry sliding metallic contact by chemically prepared functionalized graphitic nanoparticles, **Friction**, 8, 708–725.

- 4) Santosh Singh, Suprakash Samanta, Alok Kumar Das, Rashmi R. Sahoo (2019) Electrodeposited SiC-graphene oxide composite in nickel matrix for improved tribological applications, *Surface Topography: Metrology and Properties*, 7, 035004
- 5) Santosh Singh, Suprakash Samanta, Alok Kumar Das, Rashmi R. Sahoo (2019) Hydrophobic reduced graphene oxide based Ni coating for improved tribological application, *Journal of Materials Engineering and Performance*, 28, 3704 – 3713.
- 6) Suprakash Samanta, Santosh Singh and Rashmi. R. Sahoo (2019) Covalently grafting of self-assembled functionalized graphene oxide multilayer films on Si substrate for solid film lubrication, *Thin Solid Films*, 683, 16 – 26.
- 7) Suprakash Samanta, Santosh Singh and Rashmi. R. Sahoo (2019) Effect of thermal annealing on the physico-chemical and tribological performance of hydrophobic alkylated graphene sheets, *New Journal of Chemistry*, 43, 2624 – 2639.
- 8) Santosh Singh, Suprakash Samanta, Alok Kumar Das, **Rashmi R. Sahoo** (2018) Tribological investigation of Ni-graphene oxide composite coating produced by pulsed Electrodeposition, *Surface and Interface*, 12, 61-70
- 9) Santosh Singh, Amit Banerjee, Debajyoti Das, and **Rashmiranjan Sahoo** (2017) Anti-friction diamond-like carbon nanocoatings for advanced tribological applications, *AIP Proceedings* 1832, 080036
- 10) Suprakash Samanta, Santosh Singh and **Rashmi. R. Sahoo** (2015) Simultaneous chemical reduction and surface functionalization of graphene oxide for efficient lubrication of steel–steel contact, *RSC Adv.*, 5, 61888 - 61899.
- 11) **R. R. Sahoo**, S. K. Biswas (2014) Effect of Layered MoS<sub>2</sub> Nanoparticles on the Frictional Behavior and Microstructure of Lubricating Greases, *Tribology Lett.*, 53, 157–171.
- 12) **Rashmi R. Sahoo**, Santu Bhattacharjee, Tuhin Das (2013) Development of nanofluids as lubricant to study friction and wear behaviour of stainless steels. *International Journal of Modern Physics: Conference Series*, 22, 664-669.
- 13) **Rashmi R. Sahoo** and Sanjay K. Biswas (2010) Deformation and friction of MoS<sub>2</sub> particles in liquid suspensions used to lubricate sliding contact, *Thin Solid Films*, 518, 115 – 125.
- 14) **Rashmi R. Sahoo** and Sanjay K. Biswas (2010) Microtribology and friction-induced material transfer in layered MoS<sub>2</sub> nanoparticles sprayed on a steel surface, *Tribology Lett.*, 37, 313 – 326.
- 15) **Rashmi R. Sahoo**, Souvik Math and Sanjay K. Biswas (2010) Mechanics of deformation under traction and friction of a micrometric monolithic MoS<sub>2</sub> particle in comparison with those of an agglomerate of nanometric MoS<sub>2</sub> particles, *Tribology Lett.*, 37, 239 – 249.
- 16) **Rashmi R. Sahoo** and Sanjay K. Biswas (2009) Frictional response of fatty acids on steel. *Journal of Colloid and Interface Science*, 333, 707 – 718.
- 17) **Rashmi R. Sahoo** and Archita Patnaik (2005) Surface confined self-assembled fullerene nanoclusters: A microscopic study. *Appl. Surf. Sci.*, 245(1–4), 26 – 38.
- 18) **Rashmi R. Sahoo** and Archita Patnaik (2003) Binding of fullerenes to gold surface functionalized by self-assembled monolayers of 8-amino-1-octane thiol: A structure elucidation. *Journal of Colloid and Interface Science*, 268, 43 – 49.
- 19) **Rashmi R. Sahoo**, Alok D. Bokare and Archita Patnaik (2002) Recoil Tritium - C<sub>60</sub> Interaction: A Channel for Endohedral Encapsulation of Tritium in C<sub>60</sub>, *Carbon*, 40, 2453-2460.
- 20) **Rashmi R. Sahoo** and Archita Patnaik (2001) Thermal Desorption of <sup>3</sup>He from T@C<sub>60</sub>, *Chem. Phys. Lett.*, 349, 201-209.

#### **Conferences (National and International)**

1. **Rashmi R. Sahoo**, Biswajit Ruj, Technological Advancement for Effective Remediation of Nitrate Treatment and Removal from Contaminated Groundwater, 4<sup>th</sup> REGIONAL SCIENCE &

TECHNOLOGY CONGRESS (WESTERN REGION), 9-10 December 2019, University of Bardhaman.

2. Suprakash Samanta, Santosh Singh, **Rashmi R Sahoo** (2018) Effect of Wettability on Covalent Functionalized Graphene Oxide with Variable Chain Length Amine for Fluidic Lubrication of Steel-Steel Tribocontacts. National Conference on Graphene and Functional Materials (NCGFM-2018), Feb 23-24, CSIR-CMERI, Durgapur. (**BEST POSTER AWARD**)
3. Santosh Singh, Alok Das, Suprakash Samanta, **Rashmi R Sahoo** (2018) Dry Sliding Wear and Friction Behaviour of Ni- Sic-Graphene oxide composite Coating Prepared by Pulse Electro deposition. National Conference on Graphene and Functional Materials (NCGFM-2018), Feb 23-24, CSIR-CMERI, Durgapur.
4. Abhilash Jose, Dinesh Kumar Kotnees, Santosh Singh, Alok Kumar Das, **Rashmi. R. Sahoo** (2018) Tribological characterization of electroless Ni-P coatings under dry lubricated condition with varying composite phase, National Conference on Graphene and Functional Materials (NCGFM-2018), Feb 23-24, CSIR-CMERI, Durgapur.
5. Suprakash Samanta, Deepika M., **R. R. Sahoo** (2017) Covalent functionalization of hexagonal boron nitride (h-BN) nanoparticles for lubrication of steel-steel tribocontacts International Conference on Sustainable Manufacturing, Automation and Robotic Technologies (IC-SMART) 15 – 16 Dec, 2017, CSIR-CMERI
6. Suprakash Samanta, **Rashmi R. Sahoo** (2017) Lubricating Performances of Covalently Stitching and Surface Modified Graphene Oxide in Paraffin Oil Suspension. 70<sup>th</sup> Annual Session of Indian Institute of Chemical Engineers, CHEMCON – 2017, December 27 – 30- Haldia Institute of Technology, Haldia, WB.
7. Santosh Singh, Amit Banerjee, Debajyoti Das, **Rashmiranjan Sahoo** (2017) Tribological Investigation of DLC Nanocoatings prepared by RF Sputtering. 4th International conference on Nanoscience and Nanotechnology (ICONN-2017), 9 – 11 August, 2017, SRM University, Chennai.
8. Suprakash Samanta, **Rashmi. R. Sahoo** (2017) Effect of wetting behavior of functionalized graphene oxide on lubrication of dry contact, National Conference on Advanced Functional Materials Processing & Manufacturing (NCAFMPM-2017), 2 – 3 February, 2017, CSIR-CMERI Durgapur.
9. Suprakash Samanta, **Rashmi. R. Sahoo** (2016) Lubricating performance of alkylated reduced graphene oxide in oil suspensions. National Tribology Conference 2016 “NTC2016”, 8 ~ 10 December 2016, IIT (BHU) Varanasi, India.
10. Santosh Singh, Amit Banerjee, Debajyoti Das and **Rashmiranjan Sahoo** (2016) Anti-friction Diamond-like Carbon Nanocoatings For Advanced Tribological Applications, 61st DAE Solid State Physics Symposium (DAE SSPS 2016), KIIT University, Bhubaneswar, Odisha, Dec 26 – 30, 2016
11. Suprakash Samanta, **Rashmi. R. Sahoo** (2016) Effect of Carbon – Carbon chain length on the lubricating ability of alkylated reduced graphene oxide. *National Symposium on Chemistry and the Environment (CE – 2016) and National Convention of Chemistry Teachers (NCCT-2016)* , Raja N. L. Khan Women's College, Midnapore, WB October 21 – 23, 2016
12. Santosh Singh, Amit Banerjee, Debajyoti Das and **Rashmiranjan Sahoo (2016)** Thin Film Anti-friction Carbon Nano-Coatings For Advanced Industrial Applications, *National Conference on Nanotechnology: Materials and Applications (NCON: M&A 2016)* June 16-17, 2016, Jadavpur University.
13. Suprakash Samanta, Santosh Singh, **R. R. Sahoo** (2015) Lubrication of dry sliding contact by functionalized graphitic nanoparticles. 4th *National Conference on Advances in Metrology (AdMet 2015)*, Durgapur, India, Feb 25-27.

14. **Rashmi. R. Sahoo**, N. C. Murmu (2014) Understanding the role of emulsifiers defined by chemistry and structure to the performance of metal working nanoemulsions. *International Tribology Conference: Asiatrib 2014*, Agra, India. February 17-20.
15. **Rashmi R. Sahoo**, Santu Bhattacharjee, Tuhin Das (2012) Novel Nanofluids as Boundary Lubricants to study Friction and Wear Behaviour of Steel – Steel Contact. *International conference on Ceramics*, Bikaner, India, December 10-12.
16. **Rashmi R. Sahoo** and Sanjay K. Biswas (2010) Effect of particle agglomeration on the deformation mechanism and tribological behavior of layered MoS<sub>2</sub> nanoparticles, 'Theoretical modelling and experimental simulations in tribology', Cargèse, France, March 22 - 26,
17. **Rashmi R. Sahoo** and Sanjay K. Biswas (2008), MS<sub>2</sub> (M = Mo, W) Nanoparticles as Potential Solid Lubricants as well as in Oil Suspension for Boundary Lubrication, *International Nanotribology Forum, NanoSikkim III*, Sikkim, India, Nov 10 –14.
18. **Rashmi R. Sahoo** and Sanjay K. Biswas (2007) Effect of Double Bonds on Friction in the Boundary Lubrication of Self-Assembled Fatty Acid Monolayers on Metal Substrates, *International Nanotribology Forum: The Hoi An Discussions*, Hoi An, Vietnam, March 26 – 30.
19. **Rashmi R. Sahoo**, Olga I. Vinogradova and Archita Patnaik (2002) Surface Science with Atomic Force Microscope: Dynamic Force Measurements, *Joint Seminar MPIP Mainz, Germany and ETH Zurich, Switzerland*, ETH Zurich, May 5 – 8.
20. **Rashmi R. Sahoo**, Alok D. Bokare and Archita Patnaik (2001) Endohedral Encapsulation of Tritium in C<sub>60</sub>. *Nuclear and Radiochemistry Symposium*, Eds. K. L. Ramkumar, R. M. Kadam, V. N. Vaidya and D. S. C. Purushottam, Pune university (India), Feb 7-11, 444 - 445. (**BEST POSTER AWARD**)
21. **Rashmi R. Sahoo** and Archita Patnaik (2000) Thermal Desorption of <sup>3</sup>He from T@C<sub>60</sub>, *DAE Solid State Physics Symposium*, Guru Ghasidas University, Bilaspur (India) Dec.27-31. **43**, 156-157.

I hereby declare that the above statements are true, complete and correct to the best of my knowledge and belief.



(Dr. R.R. Sahoo)