



Dr. Pranab Samanta

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SCHOLASTICS

- ✦ **PostDoc.**, Post Doctoral Research in Tribology with **Prof.M.M. Khonsari from LSU, USA**, 2017
- ✦ **Ph.D.**, Mechanical Engineering from **IIT, Bombay**, Mumbai, 2008.
- ✦ **M.E.**, Mechanical Engineering from Bengal Engineering and Science University, Howrah (W.B.),2003
- ✦ **B.Tech.**, Mechanical Engineering from Kalyani Govt. Engineering College, Kalyani (W.B.),1999

EMPLOYMENT RECITAL

- ❖ **Principal Scientist** at Central Mechanical Engineering Research Institute from April, 2018 to till date
- ❖ **Senior Scientist** at Central Mechanical Engineering Research Institute from April, 2014 to April, 2018
- ❖ **Scientist** at Central Mechanical Engineering Research Institute from April, 2010 to April, 2014
- ❖ **Senior Executive Engineer** at R&D Centre of Larsen & Toubro Limited, Mumbai from August, 2007 to March, 2010

ACHIEVEMENTS/AWARDS

- **CSIR Raman Fellowship** in 2017
- **Non-monetary reward (NMR)** as recognition for excellence in analysis of lubrication system of cement rotary kiln from Larsen & Toubro Limited in 2008
- **Best paper award** in technical category at 5-th International Conference on Industrial Tribology (ICIT06) at IISc, Bangalore in 2006
- Qualified for Graduate Aptitude Test in Engineering (**GATE**) in 2000 and 2001 successively.
- State Govt. **Merit Scholarship** holder at Higher Secondary in 1994

KEY ACHIEVEMENTS

Proficiency Forte: Research and Development

- ◇ Establishment of analysis procedure of lubrication system of a *cement kiln* bearing starting from scratch at higher speed at L&T, Mumbai and own NMR award
- ◇ Successfully developed a closed form analytical model of critical speed for thermoelastic instability in foil bearing observed by NASA, USA experimentally for the first time and results are published in reputed journal
- ◇ Design, analysis numerically and developed the foil bearing and run it at 30,000 rpm
- ◇ Design, analysis numerically and developed the electrodynamic bearing and run it at 2,000 rpm

Publications: SCI Journal:**52**; Conference Papers:**18** and Patents: **6**

(Google scholar **Citations: 1,245**; **h-index: 19** & **i10-index: 34**)

PhD Guidance: Awarded-**2** and On-going-**2**

RESEARCH INTERESTS

- ☑ Design, analysis and development of high speed air **foil bearings**, passive **magnetic bearings**
- ☑ **Thermoelastic instability** in the bearings
- ☑ **Used oil** based predictive maintenance of machineries
- ☑ Analysis and development of **polymer composites**
- ☑ Analysis of **shock wave** in pipe lines

FILED PATENTS

1. Samanta, P., Murmu, N.C. and Das L.G., High Speed Foil Bearing Housing for Small Turbo machines, Patent Office Application No. 20161101067, Filed on 30/03/2016 (Ref. No. 0071NF2016)
2. Samanta, P., Murmu, N.C. and Bhakta, D.K. Electrodynamic Radial Bearing with Rectangular Magnets Arranged in Halbach Array, Filed on 16-08-2019 (Ref No-0139NF2019)
3. Samanta, P., Kuila, T.K., Kumar, S., Murmu, N.C. and Hirani, H. Sandwich Structure with Ballistic Protection for Mob Control Vehicle, filed on 12-03-2020.
4. Kuila, T.; Jana, M.; Samanta, P.; Murmu, N. C. Development of scaled-up graphite oxide production technology starting from natural flake graphite. Docket no. 36326. CBR. No. 20266, Patent Office Application No. 201711019808, Filled on 06/06/2017 (Ref. No. 0045NF2017).
5. Kuila, T.; Saha, S.; Samanta, P.; Murmu, N. C. Asymmetric supercapacitor of sulfanilic acid azochromotrop functionalized reduced graphene oxide/hexagonal boron nitride superlattice. Patent Office Application No. 201711029465, Filed on 21/08/2017 (Ref. No. 0072NF2017).
6. Kuila, T.; Jana, M.; Samanta, P.; Murmu, N. C.; Biswas, S. Fast charging and storage unit for bi-cycle lighting. Patent Office Application No. 201711030708, Filed on 30/08/2017 (Ref. No. 0061NF2017).

PUBLICATIONS

Selected SCI publications out of total 52 publications:

- Samanta, P., Murmu, N.C. and Khonsari, M.M., The evaluation of foil bearing technology, Tribol. Intl., 135, 2019, 305-323.
- Adak, N.C., Chhetri, S., Sabarad, S., Roy, H., Murmu, N.C., Samanta, P. and Kuila, T., Direct observation of micro delamination in graphene oxide incorporated carbon fiber/epoxy composite via in-situ tensile test., Compos. Sci. Tech. 177, 2019, 57-65.
- Adak, N.C., Chhetri, S., Murmu, N.C., Samanta, P. and Kuila, T., Analytical and experimental investigation on magnetorheological behavior of CoFe₂O₄-rGO-incorporated epoxy fluid composites, Adv Compos Hybrid. Mater., 2019, <https://doi.org/10.1007/s42114-019-00086-8>.
- Adak, N.C., Chhetri, S., Murmu, N.C., Samanta, P. Kuila, T. and Lee, J.H., Experimental and numerical investigation on the mechanical characteristics of polyethylenimine functionalized graphene oxide incorporated woven carbon fibre/epoxy composites., 156 (1), 2019, 240-251.
- Samanta, P., Kumar, P. and Murmu, N.C., Design and Analysis of an Electrodynamic Bearing with Magnets Arranged in Halbach Array., Available at SSRN: <https://ssrn.com/abstract=3328433> or <http://dx.doi.org/10.2139/ssrn.3328433>.
- Samanta, P. and Khonsari, M.M.*, On the thermoelastic instability of foil bearings+, Tribol. Intl. 121, 2018, 10-20.
- Adak, N. C.; Chhetri, S.; Kuila, T.; Murmu, N. C.; Hui, D.; Samanta, P*; Lee J. H*. Effect of hydrazine reduced graphene oxide on Inter-laminar Fracture Toughness of woven carbon fiber/epoxy composite. Composite Part B: Engineering, 149, 2018, 22-30. (I.F.- 4.727).
- Adak, N. C.; Chhetri, S.; Kim, N. H.; Murmu, N. C.; Samanta, P.; Kuila, T*. Static and dynamic mechanical properties of graphene oxide-incorporated woven carbon fiber/epoxy composite. Journal of Materials Engineering and Performance 2018, 27, 1138-1147. (Accepted.) (I.F.-1.331).
- Kumar, M. P.; De, S.; Samanta, P.; Murmu, N. C. A comprehensive numerical model for double-layered porous air journal bearing at higher bearing numbers. Proc. IMechE. Part J: J. Eng. Tribol. 2017; 0 (0):1-15. (I.F.-1.32)
- Kumar, M. P.; Samanta, P. and Murmu, N. C., Investigation of velocity slip effect on steady state characteristics of finite hydrostatic double-layered porous oil journal bearing, Proc IMECHE Part J: Journal of Engineering Tribology, DOI: 10.1177/1350650115569553, 2015, 229, 773-784 (I.F.-1.32).
- Kumar, M. P.; Samanta, P. and Murmu, N. C. Rigid rotor stability analysis on finite hydrostatic double layered porous oil journal bearing with velocity slip, Tribology Transactions 2015, 58, 930-940.
- H.Hirani and P.Samanta, Hybrid (hydrodynamic + permanent magnetic) journal bearings+, *Journal of Engineering Tribology, Proc. IMechE*, Part J, Vol 221, 2007, p881-891.
- Samanta, P. and H.Hirani, Magnetic Bearing Configurations: Experimental and Theoretical Studies+, *IEEE Transactions on Magnetism*, Vol 44(2), 2008, p292-300.

INVITED TALKS

- ❖ Samanta, P. Fundamental of a Foil Air Bearings, at International Symposium on Aspects of Mechanical Engineering and Technology for Industry on Dec 7, 2014, [NERIST, Nirjuli, Arunachal Pradesh](#)
- ❖ Samanta, P., Foil Bearings, at TEQIP on Fundamental of Engineering Tribology with Applications on Dec 11, 2015 at [IIT Delhi, New Delhi](#)
- ❖ Samanta, P., Used oil analysis, at Machine condition monitoring (MCM-2016) on Sep. 2016, [NIT Durgapur](#)
- ❖ Samanta, P., Machinery maintenance using used oil analysis, at International workshop on Tribology, on January, 2019, at [Sangamner, Maharashtra](#)
- ❖ Samanta, P., Machinery maintenance using oil analysis, on July, 2019 at [HAL, Koraput](#)