

Curriculum Vitae

Dr. Tapas Laha, Professor

Department of Metallurgical & Materials Engineering,

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Date of Birth: 07/07/1978

Research Areas:

- Surface Engineering & Coating – Synthesis and Interfacial Phenomena
- Bulk Metallic glass nanocomposites and coatings – Understanding the effect of multi-phase microstructure
- Metallic glass coatings – Development and Characterization
- Bulk nanostructured metallic composites and layered composites - Processing & Characterization
- Material Synthesis by Thermal spraying, Mechanical alloying and Spark Plasma Sintering
- Functionally Graded Ceramic Composites – Synthesis and mechanical property assessment

Educational Qualifications:

S. No.	Degree	University	Year	Major
01	B.E.	Bengal Engineering College (IEST), Shibpur, India	1999	Metallurgical Engineering
02	M.Tech.	Indian Institute of Technology Kanpur, India	2002	Materials & Metallurgical Engineering
03	Ph.D.	Florida International University, Miami, USA	2006	Materials Science & Engineering

Professional and research experience:

Sl. No.	Designation	Institute / Organization	Duration of Work
1	Professor	Indian Institute of Technology, Kharagpur	Dec 2018 onwards
2	Associate Professor	Indian Institute of Technology, Kharagpur	Oct. 2014 – Dec 2019
3	Assistant Professor	Indian Institute of Technology, Kharagpur	Aug. 2008 - Oct. 2014
4	Post-Doctoral Scientist	University of California, Davis	Aug. 2007 – Jul 2008
5	Post-Doctoral Scientist	Florida International University, Miami	Aug. 2007 – Jul 2008

Awards/Distinctions:

- i. *"IEI Young Engineers Award 2010-2011"*, in Metallurgical & Materials Engineering discipline, given by the Institution of Engineers (India)
- ii. *Paper Ranked # 1 in Materials Science and Engineering: R* journal published by Elsevier Science, April-June, 2007
- iii. *"The Outstanding Ph.D. Graduate, Fall 2006"* from College of Engineering and Computing, Florida International University, Miami
- iv. *"Dissertation Year Fellowship"*, University Graduate School, Florida International University, 2006
- v. *"Zeta Alpha - Phi Beta Delta Honor Society Member"* at FIU, 2005. Phi Kappa Phi is renowned for academic excellence

Teaching activity:*Theory Courses:*

- i. Advanced Materials & Processes (MT 60029)*
- ii. Advanced Hybrid Materials (MT60201)*
- i. Composite Materials (MT 41023)*
- ii. Introduction to Nano-science And Technology (NT70002 - Module: Met & Mech Eng.)*
- iii. Materials Characterization (MT 31012)
- iv. Materials Engineering (MT 30001)

Laboratory Courses:

- i. Introduction to Engineering Materials Lab (MT 29007)*
- ii. X-Ray Diffraction & Transmission Electron Microscopy Lab (MT 39022)*
- iii. Materials Characterization Lab (MT 39004)
- iv. Heat Treatment of Materials Lab (MT 39003)

** Currently, these courses are being taught alternatively in Autumn and Spring semesters.*

Research Publications:

Publication summary:

- Published in Peer Reviewed Journals: 92
- Published in Conference Proceedings: 13
- Citations : 3907, h-index: 29, i10-index: 60 (Updated on 27-04-2023)

Publications in peer reviewed journals:

1. A. Faridi, S.K. Nayak, D.K.V.D. Prasad, A. Kumar, T. Laha, Effect of microstructure and phase evolution on the wear behavior of Fe-based amorphous/nanocrystalline composite coatings synthesized by plasma spraying, *Journal of Thermal Spray Technology*, Accepted in June 2023
2. D. Prasad, I. Kumar, S.K. Nayak, S. Maharana, S. Bysakh, T. Laha, Evaluation of room temperature creep deformation of in situ Fe-based bulk metallic glass nanocomposites by instrumented indentation, *Intermetallics*, 161, 107972 (2023)
3. A. Kumar, S.K. Nayak, T. Laha, Deformation behavior of plasma sprayed Fe-based amorphous/nanocrystalline coating under multi-scale tribological contact, *Journal of Non-Crystalline Solids* 609, 122281 (2023)
4. D. Prasad, I. Kumar, S. Bysakh, T. Laha, In situ processing of Fe-based bulk metallic glass nanocomposites in supercooled liquid region by spark plasma sintering, *Journal of Non-Crystalline Solids* 607, 122231 (2023)
5. A.K. Naik, M. Nazeer, D.K.V.D. Prasad, T. Laha, S. Roy, Development of functionally graded ZrB₂-B₄C composites for lightweight ultrahigh-temperature aerospace applications, *Ceramics International*, 48 (22), 33332-33339 (2022)
6. S.K. Nayak, A. Kumar, T. Laha, Fe-based metallic glass coatings by thermal spraying: a focused review on corrosion properties and related degradation mechanisms, *International Materials Reviews*, 68 (4) 404-485 (2023)
7. S.K. Nayak, A. Faridi, Gopi M., A. Kumar, T. Laha, Fe-based metallic glass composite coatings by HVOF spraying: Influence of Mo on phase evolution, wear and corrosion resistance, *Materials Characterization*, v 191, 112149 (2022)
8. M. Nazeer, P. Jana, M.J. Oza, K.G. Schell, E.C. Bucharsky, T. Laha, S. Roy, Ultrasonic study of the elastic properties of functionally graded and equivalent monolithic composites, *Materials letters*, v 323, 132594 (2022)
9. A. Sahu, R.S. Maurya, L.K. Singh, T. Laha, Analyzing the Effects of Milling and Sintering Parameters on Crystalline Phase Evolution and Mechanical Properties of Al₈₆Ni₈Y₆ and Al₈₆Ni₆Y_{4.5}Co₂La_{1.5} Amorphous Ribbons, *Acta Metallurgica Sinica (English Letters)*, v 35 (6), 1043-1054 (2022)
10. P. Jana, M.J. Oza, K.G. Schell, E.C. Bucharsky, T. Laha, S. Roy, Study of the elastic properties and thermal shock behavior of Al-SiC- graphite hybrid composites fabricated by spark plasma sintering, *Ceramics International*, v 48 (4), 5386-5396 (2022)
11. M.S. Charan, A.K. Naik, N. Kota, T. Laha, S Roy, Review on developments of bulk functionally graded composite materials, *International Materials Reviews*, 1-67 (2022)
12. N. Kota, M.S. Charan, T. Laha, S Roy, Review on development of metal/ceramic interpenetrating phase composites and critical analysis of their properties, *Ceramics International*, v 48 (2), 1451-1483 (2022)
13. A. Kumar, S.K. Nayak, T. Laha, Comparative Study on Wear and Corrosion Behavior of Plasma Sprayed Fe₇₃Cr₂Si₁₁B₁₁C₃ and Fe₆₃Cr₉P₅B₁₆C₇ Metallic Glass Composite Coatings, *Journal of Thermal Spray Technology*, v 31, 1302-1316 (2022)

14. S.K. Nayak, A. Kumar, T. Laha, Developing an Economical Wear and Corrosion Resistant Fe-Based Metallic Glass Composite Coating by Plasma and HVOF Spraying, *Journal of Thermal Spray Technology*, v 31, 1317-1329 (2021)
15. W.R. Ilaham, L.K. Singh, A. Kumar, T. Laha, Effect of thermomechanical treatment on the microstructure and mechanical properties of Si-containing oxide dispersion strengthened reduced activation ferritic steel, *Nuclear Materials and Energy*, v 28, 101041 (2021)
16. P. Bijalwan, C. Singh, A. Kumar, K. Sarkar, N. Rani, T. Laha, A. Banerjee, Corrosion behaviour of plasma sprayed Fe based metallic glass ($\text{Fe}_{73}\text{Cr}_2\text{Si}_{11}\text{B}_{11}\text{C}_3$ (at%)) coatings in 3.5% NaCl solution, *Journal of Non-Crystalline Solids*, v 567, 120913 (2021)
17. M.J. Oza, K.G. Schell, E.C. Bucharsky, T. Laha, S. Roy, Developing a hybrid Al-SiC-graphite functionally graded composite material for optimum composition and mechanical properties, *Materials Science and Engineering: A*, v 805, 140625 (2021)
18. A. Kumar, S.K. Nayak, A. Banerjee, T. Laha, Multi-scale indentation creep behavior in Fe-based amorphous/nanocrystalline coating at room temperature, *Materials Letters*, v 283, 128768 (2021)
19. L.K. Singh, A. Bhadauria, T. Laha, Understanding the effect of bimodal microstructure on the strength-ductility synergy of Al-CNT nanocomposites, *Journal of Materials Science*, v 56 (2), 1730-1748 (2021)
20. S.K. Nayak, A. Kumar, K. Sarkar, A. Banerjee, T. Laha, Mechanistic insight into the role of amorphicity and porosity on determining the corrosion mitigation behavior of Fe-based amorphous/nanocrystalline coating, *Journal of Alloys and Compounds*, v 849, 156624 (2020)
21. A. Bhadauria, L.K. Singh, S.K. Nayak, T. Laha, Tensile deformation behavior and strengthening mechanism in graphene nanoplatelet reinforced bimodal grained aluminum nanocomposite synthesized by spark plasma sintering and hot rolling, *Materials Characterization*, v 168, 110568 (2020)
22. A. Kumar, S.K. Nayak, A. Pathak, A. Banerjee, T. Laha, Investigation of nanomechanical deformation behavior in plasma sprayed Fe-based amorphous/nanocrystalline composite coating via multi-scale indentation and nanotribology, *Journal of Non-Crystalline Solids*, v 545, 120244 (2020)
23. A. Kumar, S.K. Nayak, K. Sarkar, A. Banerjee, K. Mondal, T. Laha, Investigation of nano- and micro-scale structural evolution and resulting corrosion resistance in plasma sprayed Fe-based (Fe-Cr-B-C-P) amorphous coatings, *Surface and Coatings Technology*, v 397, 126058 (2020)
24. S.K. Nayak, A. Kumar, A. Pathak, A. Banerjee, T. Laha, Multi-scale mechanical properties of Fe-based amorphous/nanocrystalline composite coating synthesized by HVOF spraying, *Journal of Alloys and Compounds*, v 825, 154120 (2020)
25. R.S. Maurya, A. Sahu, T. Laha, Nanoindentation study on $\text{Al}_{86}\text{Ni}_8\text{Y}_6$ glassy alloy synthesized via mechanical alloying and spark plasma sintering, *International Journal of Materials Research*, v 111 (2), 160-167 (2020)
26. A. Sahu, R.S. Maurya, T. Laha, Non-isothermal crystallization behavior of $\text{Al}_{86}\text{Ni}_8\text{Y}_6$ and $\text{Al}_{86}\text{Ni}_6\text{Y}_{4.5}\text{Co}_2\text{La}_{1.5}$ melt-spun ribbons, milled ribbon particles and bulk samples consolidated by spark plasma sintering, *Thermochimica Acta*, v 684, 178486 (2020)
27. A. Sahu, R.S. Maurya, S. Dinda, T. Laha, Phase Evolution-Dependent Nanomechanical Properties of $\text{Al}_{86}\text{Ni}_8\text{Y}_6$ and $\text{Al}_{86}\text{Ni}_6\text{Y}_{4.5}\text{Co}_2\text{La}_{1.5}$ Spark Plasma-Sintered Bulk Amorphous Composites, *Metallurgical and Materials Transactions A*, v 51, 5110-5119 (2020)
28. C. Pohshna, D.R. Mailapalli, T. Laha, Synthesis of nanofertilizers by planetary ball milling, *Sustainable Agriculture Reviews*, v 40, 75-112 (2020)
29. R.S. Maurya, T. Laha, The Glassy Structure Formation and Phase Evolution in Mechanically Alloyed and Spark Plasma-Sintered Al-TM-RE Alloys, *Journal of Materials Engineering and Performance*, v 28 (12), 7407-7418 (2019)

30. W.R. Ilaham, R.S. Maurya, T. Laha, Investigation of high-temperature oxidation behavior of silicon added 14Cr nanostructured ferritic alloys synthesized via mechanical alloying and spark plasma sintering, Materials Research Express, v 6 (11), 1150f6 (2019)
31. L.K. Singh, A. Bhadauria, T. Laha, Comparing the strengthening efficiency of multiwalled carbon nanotubes and graphene nanoplatelets in aluminum matrix, Powder Technology, v 356, 1059-1076, (2019)
32. S. Ghosh, P. Das, S. Ganguly, S. Remanan, T.K. Das, S.K. Bhattacharyya, J. Baral, A.K. Das, T. Laha, N.C. Das, 3D-Enhanced, High-Performing, Super-hydrophobic and Electromagnetic-Interference Shielding Fabrics Based on Silver Paint and Their Use in Antibacterial Applications, Chemistry Select, v 4 (40), 11748-11754 (2019)
33. S.K. Nayak, A. Kumar, K. Sarkar, A. Pathak, A. Banerjee, T. Laha, A Study on the Corrosion Inhibition of Fe-Based Amorphous/Nanocrystalline Coating Synthesized by High-Velocity Oxy-Fuel Spraying in an Extreme Environment, Journal of Thermal Spray Technology, v 28 (7), 1433–1447 (2019)
34. P. Bijalwan, A. Kumar, S.K. Nayak, A. Banerjee, M. Dutta, T. Laha, Microstructure and corrosion behaviour of Fe-based amorphous composite coatings developed by atmospheric plasma spraying, Journal of Alloys and Compounds, v 796, 47-54 (2019)
35. A. Kumar, S.K. Nayak, P. Bijalwan, M. Dutta, A. Banerjee, T. Laha, Optimization of mechanical and Corrosion properties of plasma sprayed low-chromium containing Fe-based amorphous/nanocrystalline composite coating, Surface and Coatings Technology, v 370, 255-268 (2019)
36. A. Kumar, S.K. Nayak, P. Bijalwan, M. Dutta, A. Banerjee, T. Laha, Mechanical and corrosion properties of plasma-sprayed Fe-based amorphous/nanocrystalline composite coating, Advances in Materials and Processing Technologies, v 5 (2), 371-377 (2019)
37. A. Bhadauria, L.K. Singh, T. Laha, Nanoindentation and nanoscratch properties of graphene nanoplatelets reinforced spark plasma sintered aluminium-based nanocomposite, Advances in Materials and Processing Technologies, v 5 (2), 295-302 (2019)
38. A. Sahu, R.S. Maurya, T. Laha, Comparative study on sintering behavior of $\text{Al}_{86}\text{Ni}_6\text{Y}_{4.5}\text{Co}_2\text{La}_{1.5}$ mechanically alloyed amorphous powder and melt-spun ribbon, Advanced Powder Technology, v 30 (4), 691-699 (2019)
39. A. Bhadauria, L.K. Singh, T. Laha, Combined strengthening effect of nanocrystalline matrix and graphene nanoplatelet reinforcement on the mechanical properties of spark plasma sintered aluminum based nanocomposites, Materials Science & Engineering: A, v 749, 14-26 (2019)
40. A. Sahu, R.S. Maurya, T. Laha, Effect of sintering temperature on phase evolution of $\text{Al}_{86}\text{Ni}_6\text{Y}_{4.5}\text{Co}_2\text{La}_{1.5}$ bulk amorphous composites synthesized via mechanical alloying and spark plasma sintering, Progress in Natural Science: Materials International, v 29 (1), 32-40 (2019)
41. A. Kumar, S.K. Nayak, P. Bijalwan, M. Dutta, A. Banerjee, T. Laha, Fe-based amorphous/nanocrystalline composite coating by plasma spraying: Effect of heat input on morphology, phase evolution and mechanical properties, Journal of Alloys and Compounds, v 771, 827-837 (2019)
42. W.R. Ilaham, L. Singh, A. Bhadauria, T. Laha, Effect of Si addition on the microstructure and mechanical property of nanostructured oxide dispersion strengthened ferritic steel synthesized via mechanical alloying and spark plasma sintering, Fusion Engineering and Design, v 138, 303-312 (2019)
43. L.K. Singh, A. Bhadauria, A. Oraon, T. Laha, Spark plasma sintered Al-0.5 wt% MWCNT nanocomposite: Effect of sintering pressure on the densification behavior and multi-scale mechanical properties, Diamond & Related Materials, v 91, 144-155 (2019)
44. L.K. Singh, A. Bhadauria, T. Laha, Al-MWCNT nanocomposite synthesized via spark plasma sintering: Effect of powder milling and reinforcement addition on sintering kinetics and mechanical properties, Journal of Materials Research and Technology, v 8 (1), 503-512 (2019)

45. A. Patra, R. Saxena, R.R. Sahoo, S.K. Karak, T. Laha, Evaluation of Thermal, Fracture, and High Temperature Behavior of Mechanically Alloyed and Spark Plasma Sintered Nano-Y₂O₃ Dispersed W-Ni-Mo and W-Ni-Ti-Nb Alloys, *Materials Performance and Characterization*, 7 (1), 515-531 (2018)
46. L.K. Singh, A. Bhadauria, S. Jana, T. Laha, Effect of Sintering Temperature and Heating Rate on Crystallite Size, Densification Behaviour and Mechanical Properties of Al-MWCNT Nanocomposite Consolidated via Spark Plasma Sintering, *Acta Metallurgica Sinica*, v 31, 1019–1030 (2018)
47. T. Thomas, C. Zhang, A. Sahu, P. Nautiyal, A. Loganathan, T. Laha, B. Boesl, A. Agarwal, Effect of graphene reinforcement on the mechanical properties of Ti₂AlC ceramic fabricated by spark plasma Sintering, *Materials Science & Engineering A*, v 728, 45-53 (2018)
48. A. Bhadauria, L.K. Singh, T. Laha, Effect of physio-chemically functionalized graphene nanoplatelet reinforcement on tensile properties of aluminum nanocomposite synthesized via spark plasma sintering, *Journal of Alloys and Compounds*, v 748, 783-793 (2018)
49. O. Rahman, M. Sribalaji, B. Mukherjee, T. Laha, A. Keshari, Synergistic effect of hybrid carbon nanotube and graphene nanoplatelets reinforcement on processing, microstructure, interfacial stress and mechanical properties of Al₂O₃ nanocomposites, *Ceramics International*, v 44, 2109-2122 (2018)
50. A. Loganathan, A. Sahu, C. Rudolf, C. Zhang, S. Rengifo, T. Laha, B. Boesl, A. Agarwal, Multi-scale tribological and nanomechanical behavior of cold sprayed Ti₂AlC MAX phase coating, *Surface and Coatings Technology*, v 334, 384-393 (2018)
51. G. Thirunavukarasu, S. Kundu, D. Roy, T. Laha, S. Chatterjee, Exhibition of veiled features in diffusion bonding of titanium alloy and stainless steel via copper, *Metallurgical Research & Technology*, v 115 (1), 115 (2018)
52. A. Patra, R. Saxena, S.K. Karak, T. Laha, S.K. Sahu, Fabrication and characterization of nano-Y₂O₃ dispersed W-Ni-Mo and W-Ni-Ti-Nb alloys by mechanical alloying and spark plasma sintering, *Journal of Alloys and Compounds*, v 707, 245-250 (2017)
53. A. Banerjee, D. Prusty, M. Dutta, A.K. Bhowmick, T. Laha, Effect of Cu₂O thin film on Cu-Sn alloy coated steel surface in promoting interfacial adhesion with rubber by, *Journal of Adhesion Science & Technology*, v 31, 1163-1180 (2017)
54. A. Chakraborty, P. Govardhana, A. Mondal, M. Dutta, S.B. Singh, T. Laha, Microstructural development of prior nickel coated hot dipped galvanised coatings, *Journal of Alloys and Compounds*, v 699, 648-656 (2017)
55. R. S. Maurya, A. Sahu, T. Laha, Effect of sintering temperature on phase transformation during consolidation of mechanically alloyed Al₈₆Ni₆Y₆Co₂ amorphous powders by spark plasma sintering, *Journal of Non-Crystalline Solids*, v 453, 1-7 (2016)
56. R.S. Maurya, T. Laha, Microstructure and phase evolution in spark-plasma-sintered Al₈₆Ni₆Y_{4.5}Co₂La_{1.5} glassy alloy, *Philosophical Magazine Letters*, v 96 (8), 313-321 (2016)
57. M. Sribalaji, O.S. Asiq Rahman, T. Laha, A.K. Keshri, Nanoindentation and nanoscratch behavior of electroless deposited nickel-phosphorous coating, *Materials Chemistry and Physics*, v 177, 220-228 (2016)
58. L.K. Singh, A. Maiti, R.S. Maurya, T. Laha, Al Alloy Nanocomposite Reinforced with Physically Functionalized Carbon Nanotubes Synthesized via Spark Plasma Sintering, *Materials & Manufacturing Processes*, v 31 (6), 733-738 (2016)
59. R.S. Maurya, A. Sahu, T. Laha, Quantitative phase analysis in Al₈₆Ni₆Y₆ bulk glassy alloy synthesized by consolidating mechanical alloyed amorphous powder via spark plasma sintering, *Materials & Design*, v 93, 96-103 (2016)
60. R.S. Maurya, A. Sahu, T. Laha, Microstructural and phase analysis of Al based bulk metallic glass synthesized by mechanically alloying and consecutive spark plasma sintering with varying consolidation pressure, *Advanced Materials Letters*, v 7 (3), 187-191 (2016)

61. R.S. Maurya, A. Sahu, T. Laha, Effect of consolidation pressure on phase evolution during sintering of mechanically alloyed $\text{Al}_{86}\text{Ni}_8\text{Y}_6$ amorphous powders via spark plasma sintering, *Materials Science & Engineering A*, v 649, 48-56 (2016)
62. R.S. Maurya, T. Laha, Effect of rare earth and transition metal elements on the glass forming ability of mechanical alloyed Al-TM-RE based amorphous alloys, *Journal of Materials Science & Technology*, v 31 (11), 1118-1124 (2015)
63. A. Maiti, L. Reddy, F. Chen, L. Zhang, J.M. Schoenung, E.J. Lavernia, T. Laha, Carbon Nanotube reinforced Al alloy-based nanocomposites via spark plasma sintering, *Journal of Composite Materials*, v 49 (16), 1937–1946 (2015)
64. A. Banerjee, M. Dutta, S. Bysakh, A.K. Bhowmick, T. Laha, Microstructural evolution in Cu-Sn coating with varying Sn content on steel substrate and its effect on interfacial adhesion, *Surface and Coatings Technology*, v 262, 200–209 (2015)
65. A. Banerjee, M. Dutta, S. Bysakh, A.K. Bhowmick, T. Laha, A novel coating strategy towards improving interfacial adhesion strength of Cu-Sn alloy coated steel with vulcanized rubber, *Applied Surface Science*, v 313, 804–816 (2014)
66. A. Banerjee, M. Dutta, A.K. Bhowmick, T. Laha, Effect of Cu strike coating on adhesion between Cu-Sn coated steel and rubber, *Journal of Adhesion Science & Technology*, v 28 (16), 1610-1628 (2014)
67. A. Banerjee, M. Dutta, S. Bysakh, A.K. Bhowmick, T. Laha, Role of Sn on the adhesion in Cu-Sn alloy coated steel-rubber interface, *Journal of Adhesion Science & Technology*, v 28 (11), 987-1004 (2014)
68. A. Banerjee, M. Dutta, A.K. Bhowmick, T. Laha, Effect of Sn on the Adhesion between Cu-Sn Alloy Coated Steel and Styrene Butadiene Based Rubber, *ISIJ International*, v 54 (3), 671-676 (2014)
69. A. Banerjee, M. Dutta, A.K. Bhowmick, T. Laha, Role of Sn on the Adhesion between Cu-Sn Alloy Coated Steel and SBR Based Rubber, *Materials Science Forum*, v 783, 1536-1541 (2014)
70. A. Maiti, R.S. Maurya, T. Laha, Synthesis of Physically Functionalized Carbon Nanotube Reinforced Al-Si Nanocomposite by Spark Plasma Sintering, *Materials Science Forum*, v 783-786, 1542-1547 (2014)
71. S. Kalmodia, S. Goenka, T. Laha, D. Lahiri, B. Basu, K. Balani, Microstructure, mechanical properties, and in vitro biocompatibility of spark plasma sintered hydroxyapatite–aluminum oxide-carbon nanotube composite, *Materials Science and Engineering: C*, v 30 (8), 1162-1169 (2010)
72. A.K. Keshri, K. Balani, S.R. Bakshi, V. Singh, T. Laha, S. Seal, A. Agarwal, Structural transformation in carbon nanotubes during thermal spray processing, *Surface and Coatings Technology*, v 203 (16), 2193–2201 (2009)
73. A.K. Keshri, S.R. Bakshi, Y. Chen, T. Laha, X. Li, C. Levy, A. Agarwal, Nanomechanical behavior of plasma sprayed PZT coatings, *Surface Engineering*, v 25 (4), 270-275 (2009)
74. T. Laha, Y. Chen, D. Lahiri, A. Agarwal, Tensile properties of carbon nanotube reinforced aluminum nanocomposite fabricated by plasma spray forming, *Composites: Part A: Applied Science and Manufacturing*, v 40 (5), 589–594 (2009)
75. Y. Chen, T. Laha, K. Balani, A. Agarwal, Nanomechanical properties of hafnium nitride coating, *Scripta Materialia*, v 58 (12), 1121-1124 (2008)
76. T. Laha, A. Agarwal, Effect of sintering on thermally sprayed carbon nanotube reinforced aluminum nanocomposite, *Materials Science and Engineering: A*, v 480 (1-2), 323-332 (2008)
77. K. Balani, S. R. Bakshi, Y. Chen, T. Laha, A. Agarwal, Role of Powder Treatment and Carbon Nanotube Dispersion in the Fracture Toughening of Plasma Sprayed Aluminum Oxide—Carbon Nanotube Nanocomposite, *Journal of Nanoscience and Nanotechnology*, v 7 (10), 3553-3562 (2007)
78. S.R. Bakshi, K. Balani, T. Laha, J. Tercero, A. Agarwal, The nanomechanical and nanoscratch properties of MWNT-reinforced ultrahigh-molecular-weight polyethylene coatings, *JOM*, v 59 (7), 50-53 (2007)

79. T. Laha, Y. Liu and A. Agarwal, Carbon Nanotube Reinforced Aluminum Nanocomposite via Plasma and High Velocity Oxy-Fuel Spray Forming: A Comparative Analysis, Journal of Nanoscience and Nanotechnology, v 7 (2), 515-524 (2007)
80. T. Laha, S. Kuchibhatla, S. Seal, W. Li, A. Agarwal, Interfacial phenomena in thermally sprayed multiwalled carbon nanotube reinforced aluminum nanocomposite, Acta Materialia, v 55 (3), 1059-1066 (2007)
81. K. Balani, R. Anderson, T. Laha, M. Andara, J. Tercero, E. Crumpler, A. Agarwal, Plasma-sprayed carbon nanotube reinforced hydroxyapatite coatings and their interaction with human osteoblasts in vitro, Biomaterials, v 28 (4), 618-624 (2007)
82. S.R. Bakshi, T. Laha, K. Balani, A. Agarwal, J. Karthikeyan, Effect of carrier gas on mechanical properties and fracture behaviour of cold sprayed aluminium coatings, Surface Engineering, v 23 (1), 18-22 (2007)
83. V. Viswanathan, T. Laha, K. Balani, A. Agarwal, S. Seal, Challenges and advances in nanocomposite processing techniques, Materials Science and Engineering: R, v 54 (5-6), 121-285 (2006)
84. T. Laha, A. Agarwal, Tim McKechnie, K Rea, S. Seal, Synthesis of bulk nanostructured aluminum alloy component through vacuum plasma spray technique, Acta Materialia, v 53 (20), 5429-5438 (2005)
85. T. Laha, A. Agarwal, N. B. Dahotre, The Effective Elastic Modulus of Laser-Engineered Composite Boride Coating, Advanced Engineering Materials, v 7 (7), 626-629 (2005)
86. K. Balani, T. Laha, A. Agarwal, J. Karthikeyan, N. Munroe, Effect of carrier gases on microstructural and electrochemical behavior of cold-sprayed 1100 aluminum coating, Surface and Coatings Technology, v 195 (2-3), 272-279 (2005)
87. T. Laha, K. Balani, A. Agarwal, S. Patil, S. Seal, Synthesis of nanostructured spherical aluminum oxide powders by plasma engineering, Metallurgical and Materials Transactions A, v 36 (2), 301-309 (2005)
88. T. Laha, A. Agarwal, T. McKechnie, S. Seal, Synthesis and characterization of plasma spray formed carbon nanotube reinforced aluminum composite, Materials Science and Engineering: A, v 381 (1-2), 249-258 (2004)
89. T. Laha, A. Tewari, R. Balasubramaniam, M.N. Mungole, R.G. Baligidad, Microstructural Evolution in iron aluminide Fe-28Al-2C after high-temperature hydrogen treatment, Metallurgical and Materials Transactions A, v 35(6), 1789-1798 (2004)
90. R. Balasubramaniam, T. Laha, A. Srivastava, Long term corrosion behaviour of copper in soil: A study of archaeological analogues, Material and Corrosion, v 55 (3), 194-202 (2004)
91. T. Laha, A. Agarwal, T. McKechnie, Forming nanostructured hypereutectic aluminum via high-velocity oxyfuel spray deposition, JOM, v 56 (1), 54-56 (2004), (IMPACT FACTOR: 2.597, Citations: 10)
92. T. Laha, J. Shankar, R. Balasubramaniam, A. Tewari, D.V. Sharma, Material and Electrochemical Characterization of Ancient Indian OCP Period Copper, Indian journal of History of Science, 37 (4), 321-330 (2002)

Publications in conference proceedings:

1. S.K. Nayak, A. Kumar, K. Sarkar, A. Banerjee, T. Laha, Corrosion behavior of Fe-based amorphous/nanocrystalline composite coating: correlating the influence of porosity and amorphicity, Materials proceedings, 6,24 (2021)
2. A. Kumar, S.K. Nayak, P. Bijalwan, A. Banerjee, T. Laha, Nanoscratch and electrochemical behavior of plasma sprayed Fe-based amorphous / nanocrystalline coating, Materials Science and Technology (MS&T19) conference proceedings, September 2019, Portland, Oregon, USA, 341-347 (2019)
3. S.K. Nayak, A. Kumar, K. Sarkar, A. Pathak, A. Banerjee, T. Laha, Electrochemical corrosion behavior of Fe based amorphous / nanocrystalline composite coating prepared by high velocity oxy-fuel thermal

spraying, Materials Science and Technology (MS&T19) conference proceedings, September 2019, Portland, Oregon, USA, 348-355 (2019)

4. A. Bhadauria, L.K. Singh, T. Laha, Nanoindentation and nanoscratch properties of graphene nanoplatelets reinforced spark plasma sintered Aluminium based nanocomposite, International Conference on Advances in Materials and Processing Technologies (AMPT 2018), September 2018, Dublin, Ireland,
5. A. Kumar, S. K.Nayak, P. Bijalwan, M. Dutta, A. Banerjee, T. Laha, Mechanical and corrosion properties of atmospheric plasma sprayed Fe-based amorphous/nanocrystalline composite coating, International Conference on Advances in Materials and Processing Technologies (AMPT 2018), September 2018, Dublin, Ireland
6. A. Maiti, T. Laha, Study of distribution of Carbon nanotube in Al-CNT nanocomposite synthesized via Spark-Plasma sintering, IOP Conference Series: Materials Science and Engineering, 7th National Conference on Processing and Characterization of Materials (NCPCM 2017) 8–9 December 2017, National Institute of Technology Rourkela, India, 338 (1), 012014 (2018)
7. L.K. Singh, R.S. Maurya, A. Maiti and T. Laha, Al Based Nanocomposites Reinforced with Physically Functionalized Carbon Nanotubes Synthesized via Spark Plasma Sintering, ICMMM 2014, August 8-9, 2014, IIT Madras, Chennai, India
8. A. Banerjee, M. Dutta, T. Laha, Synthesis of Al-MWCNT Nanocomposites via Spark plasma Sintering, Proceedings of Composites and Nanocomposites, THERMEC 2013, Las Vegas, USA
9. A. Maiti, T. Laha, Role of Sn in Improving the Adhesion between Cu-Sn Alloy Coated Steel and SBR Based Rubber, Proceedings of Advanced Protective Coatings/Surface Engineering, THERMEC 2013, Las Vegas, USA
10. T. Laha, A. Agarwal, T. McKechnie, Comparative Evaluation of Plasma and High Velocity Oxy-Fuel Spray Formed Carbon Nanotube Reinforced Al-Based Composite, Surface Engineering in Materials, 2005 TMS Annual Meeting, Feb 13-17, 2005 San Francisco, USA, 49-59 (2005)
11. T. Laha, K. Balani, B. Potens, M. Andara, A. Agarwal, S. Patil, S. Seal, Plasma Engineered Nanostructured Spheres, Surface and Interfaces of Nanostructured Materials and Trends, in LIGA, Miniaturization and Nanoscale Materials Conference Proceedings, TMS Annual Meeting, March 2004, Charlotte, USA, 103-112 (2004)
12. J. Kathikeyan, T. Laha, K. Balani, A. Agarwal, N. Munroe, Microstructural and Electrochemical Characterization of Cold-Sprayed 1100 Aluminum Coating, Thermal spray 2004: advances in technology and application: proceedings of the International Thermal Spray Conference, 10-12 May, 2004, Osaka, Japan, 341-346 (2004)
13. T. Laha, R. Balasubramaniam, A. Tewari, M.N. Mungole, Electrochemical behavior of Fe-28Al-2C after high temperature hydrogen treatment, Proceedings of International Symposium on Corrosion Science in the 21st Century, July, 2003, UMIST, U.K., 6, 83 (2003)

Other Information:

Research project details:

Sl. No.	Title	Funding Agency	Duration
01	Improvement of adhesion between bead wire and rubber material inside radial tires	Tata Steel, India	2009-2014
02	Synthesis of aluminum alloy based nanocomposite with CNT reinforcement	ISIRD, SRIC, IIT Kharagpur	2011-2014
03	Synthesis of multiwalled carbon nanotube reinforced Al alloy based bulk nanocomposites via spark plasma sintering	DST Fast Track, Govt of India	2013-2016
04	Synthesis of Al-based BMG composite with improved ductility via mechanical alloying and SPS	DST SERB, Govt of India	2014-2017
05	Understanding the effect of crystalline reinforcement in Al-based BMGNCs towards improving ductility and fracture toughness	SGIRG Grant, SRIC, IIT Kharagpur	2014-2018
06	Development of corrosion and wear resistant metallic glass coatings on steel substrates	Tata Steel, India	2014-2015
07	Effect of alloying elements & processing parameters on corrosion and wear mechanism in Fe based metallic glass coating deposited via thermal spraying – Phase I	SGDRI Grant, SRIC, IIT Kharagpur	2016-2018
08	Setting Up High-End Testing Facilities of Materials for Biomaterials, Aerospace and Automotive Applications (Co-PI)	SGDRI Grant, SRIC, IIT Kharagpur	2016-2019
08	Effect of alloying elements & processing parameters on corrosion and wear mechanism in Fe based metallic glass coating deposited via thermal spraying – Phase II	Tata Steel, India	2019-2021
09	Optimization of Corrosion and Wear Properties In Plasma Sprayed Fe Based Metallic Glass Protective Coating	DST SERB, Govt of India	2021-2024
10	Development of Corrosion and Wear Resistant Fe based Metallic Glass Protective Coating via Thermal Spraying	ER&IPR, DRDO, Govt. of India	2021-2024
11	Development of ZrB ₂ /B ₄ C Functionally Graded Materials for High-temperature Aerospace Application (Co-PI)	ARDB, DRDO, Govt. of India	2021-2024
12	Development of Ni based high entropy superalloys (HESAs) with superior high temperature strength	ARDB, DRDO, Govt. of India	2023-2026

Ph.D. Supervision:**Completed: 08**

Sl. No.	Name	Thesis Title	Year
01	Dr. Anway Maity	Synthesis of MWCNT reinforced Al based nanocomposites via spark plasma sintering	2009 - 2013
02	Dr. Atanu Banerjee	Surface Engineering of Steel Substrate through a novel Cu-Sn Alloy Coating towards Improving Adhesion at Steel-Rubber Interface	2010 - 2014
03	Dr. Ram S. Maurya	Synthesis of Aluminium Based Bulk Metallic Glasses via Mechanical Alloying and Spark Plasma Sintering	2013 - 2017
04	Dr. Lavish K. Singh	Synthesis and Evaluation of Multi-Scale Mechanical Properties of Spark Plasma Sintered Bimodal Al-CNT Nanocomposites	2014 - 2019
05	Dr. Alok Bhadauria	Understanding the Effect of Multi-Scale Microstructure on Mechanical Properties of Al-GNP Bimodal Nanocomposite Synthesized via Spark Plasma Sintering	2014 - 2019
06	Dr. Wahida Raj Ilaham	Effect of Si Addition on Microstructure, Mechanical and Oxidation Properties of Nanostructured Oxide Dispersion Strengthened Reduced Activation Ferritic Steel Synthesized by Spark Plasma Sintering	2014 - 2020
07	Dr. Ashutosh Sahu	Thermal Behavior and Nanomechanical Properties of Spark Plasma Sintered Aluminum Based in-situ Amorphous Nanocomposites	2015 - 2020
08	Dr. Anil Kumar	Development of Wear and Corrosion Resistant Plasma Sprayed Low Chromium Containing Fe-based Amorphous/ Nanocrystalline Protective Coating	2016 - 2021
09	Sapan K. Nayak	Development of Fe based Metallic Glass Composite Coating by HVOF Spraying: Optimization of Corrosion and Wear Resistance	2017 - 2023

Ongoing: 07

Sl. No.	Name	Area of Research	Year of Enrollment
01	Ghewade Hrishikesh Dinkar (Co-supervisor)	Structure-Property correlation of Mo-Si based intermetallic composites for high temperature applications	Autumn 2018
02	DKV Durga Prasad	Sintering mechanism in Fe-BMGNC consolidated via spark plasma sintering	Autumn 2019
03	Mohammed Nazeer (Co-supervisor)	Processing and characterization of self-lubricating ceramic matrix composite materials with the use of spark plasma sintering	Autumn 2019
04	Md Akif Faridi	Development of wear and corrosion resistant plasma-sprayed low Cr and low Mo Fe-based amorphous/ nanocrystalline coating	Spring 2019

05	Perli Monisha (Co-supervisor)	Synthesis of Hybrid nanofertilizers via mechanical milling	Spring 2019
06	Ajit Kumar Naik (Co-supervisor)	Functionally Graded Ceramic matrix composites	Autumn 2020
07	Sudhansu Maharana	Ni-rich high entropy superalloy via spark plasma sintering	Autumn 2021
08	Manashi Sabat	ODS high entropy superalloy with improved creep properties	Autumn 2022

Membership of Professional Societies:

- The Indian Institute of Metals (IIM): Life Membership
- The Indian Science Congress Association (ISCA): Life Membership

Reviewer for peer reviewed journals:

- Surface and Coatings Technology, Elsevier
- Journal of Thermal Spray Technology, Springer
- Journal of Alloys & Compounds, Elsevier
- Journal of Non-Crystalline Solids, Elsevier
- Intermetallics, Elsevier
- Tribology International, Elsevier
- Wear, Elsevier
- Materials Science & Engineering A, Elsevier
- Composites Part A, Elsevier
- Materialia, Elsevier
- Metallurgical and Materials Transactions A, Springer
- Trans IIM, Springer

Organizational / Administrative Responsibilities:

- Secretary, Indian Institute of Metals (IIM) Kharagpur Chapter, 2017-2019: The Chapter has received the “Best Chapter Award” under the small chapter category consecutively for three years (2017-19)
- Professor in Charge, Nanoindentation & Nanotribology Lab, Central Research Facility, IIT Kharagpur, Since August 2012
- Professor in Charge, Spark Plasma Sintering Lab, School of Nano Science & Technology, IIT Kharagpur, Since December. 2013
- Professor in Charge, XRD Lab, Dept. of Met. & Mats Engg., IIT Kharagpur, Since July 2018
- Research Scholar Coordinator, Dept. of Met. & Mats Engg., IIT Kharagpur, Since January 2022
- Faculty Advisor, B. Tech Students, Dept of Met & Mats Engg, IIT Kharagpur, Since June 2009
- Chairman, Purchase Committee, Dept. of Met & Mats Engg, IIT Kharagpur, Since July 2018
- Member, Departmental Academic Committee (UG & PGR), Dept. of Met & Mats Engg, Since 2018

- ix. Coordinating Warden, Hall Management Center, IIT Kharagpur, Jan. 2019 – Dec. 2020
- x. Chairman, Canteen Management Center, IT Kharagpur, Since Feb. 2022
- xi. Course Coordinator, Intro to Nano Sci & Tech (NT70002), Mod - Met & Mech Engg, School of Nano Science & Technology, Since September 2012
- xii. Co-convenor, 4th International Conference on Advances in Materials and Materials Processing (icammp-iv), Indian Institute of Technology Kharagpur, November 2016
- xiii. Co-Convener, Congress Of Metallurgical Professionals invOlving Students, Industry & Teachers (COMPOSIT), IIT Kharagpur, 2009 and 2012
- xiv. Served in the Organizing Committee (Surface Engineering and Protection) of National Metallurgists' Day – Annual Technical Meeting (NMD-ATM) 2018, Kolkata, November 2018
- xv. Publishing and Event Coordinator, 3rd International Conference on Advances in Materials and Materials Processing (icammp-iv), Indian Institute of Technology Kharagpur, December 2011
- xvi. Session Coordinator, National Metallurgists' Day – Annual Technical Meeting (NMD-ATM) 2009, Kolkata, November 2009