

### **DEBRUPA LAHIRI**

Assistant Professor

Biomaterials and Multiscale Mechanics Laboratory  
Department of Metallurgical and Materials Engineering  
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Research Group Website: <http://faculty.iitr.ac.in/~dlahifmt/>

### **EDUCATIONAL QUALIFICATION**

- Ph.D. in Materials Science and Engineering, Florida International University, Fall 2007 – Summer 2011 (GPA 3.93/4.0)  
*Dissertation Title: Hydroxyapatite-Nanotube Composites and Coatings for Orthopedic Applications*  
(available at: <http://digitalcommons.fiu.edu/etd/444>)
- M. Tech. (*Master of Technology*), Materials and Metallurgical Engineering, Indian Institute of Technology (IIT), Kanpur, India (CPI-10.0/10.0) - Aug, 1998 – May, 2000  
*Thesis Title: Effect of  $\beta$  Processing on Microstructural Evolution of Ti-6Al-4V Alloy*
- B.E (*Bachelor of Engineering*), Metallurgical Engineering, from Bengal Engineering College, Shibpur, INDIA (78.82%), Aug, 1994 - June, 1998  
*Thesis Title: Effect of Thermo-mechanical Treatment on Low Carbon Manganese Micro Alloyed Dual Phase Steel*

### **WORK EXPERIENCE**

1. Assistant Professor, Jointly in the Department of Metallurgical and Materials Engineering & Centre of Nanotechnology, **Indian Institute of Technology (IIT), Roorkee**, India, December, 2012 onwards.
2. Visiting Assistant Professor, Department of Mechanical and Materials Engineering, **Florida International University**, Miami, Florida, August, 2012 – December, 2012
3. Post Doctoral Researcher, Department of Mechanical and Materials Engineering, **Florida International University**, Miami, Florida, August, 2011 – August, 2012.
4. Worked as Scientific Officer D in **Nuclear Fuel Complex**, Hyderabad, August, 2003 – July, 2007
5. Worked as Visiting Scientist in **Nuclear Fuel Complex**, Dept. of Atomic Energy, Govt. of India, Hyderabad, India, July, 2001 - July, 2003.
6. Worked as Metallurgist, R&D in **Indian Aluminium Co. Ltd. (INDAL)**, Belur, India, May, 1999 - January, 2001.

### **CURRENT RESEARCH INTERESTS**

- Bioceramic – nanotube composites and composite coatings for orthopedic implants.
- Metal/Ceramic/Polymer Matrix composites for structural applications, bioimplants, temporary scaffolds for tissue engineering etc
- Composites for Soft Tissue Engineering
- Nano-mechanical properties of biological cells, membranes, bone etc
- Mechanical and tribological properties of materials at different length scales
- Adhesion strength of biological cells and different nanostructures (carbon nanotube, graphene etc.) with substrate
- Understanding Nanomechanical and Nanotribological behavior of a wide variety of materials – metals, ceramics, diamond, concrete, polymers, composites and other soft materials, 1D/2D nanomaterials,

biological materials – by indentation/compression, creep, fatigue, dynamic mechanical analysis and tribological studies at nano-scale.

### **OTHER RESEARCH EXPERIENCE**

- Residual stress analysis by XRD technique; modification of residual stress measurement technique for textured materials
- Texture analysis for different single phase and two phase hcp materials using ODF and pole figures
- Line profile analysis for determination of crystal size, strains, dislocation density and stacking fault probability for hcp and fcc materials using different analysis techniques like Fourier analysis, integral breadth methods
- Analysis of sintering mechanism for metallic and ceramic materials in different atmospheres using dilatometry technique - studying sintering kinetics and activation energy

### **PUBLICATIONS**

#### **Summary:**

Book - 1

Book Chapters – 4

Peer Reviewed Journal Articles – 75

h-index – 23 (scopus.com)

Total Citations - 1954 (scopus.com)

i10 Index – 49 (google scholar)

#### **BOOK**

1. “Carbon Nanotubes Reinforced Metal Matrix Composites”, A. Agarwal, S.R. Bakshi, **D. Lahiri**, Taylor and Francis Publishers, ISBN: 978-1-4398114-9-8.

#### **BOOK CHAPTERS**

1. “Graphene Reinforced Ceramic and Metal Matrix Composites”, **D. Lahiri**, A. Agarwal, in “Graphene: Synthesis and Applications”, Editors: W. Choi and J. Lee, Taylor and Francis Publishers, ISBN: 9781439861875.
2. “Medical Applications of Hierarchical Composites”, Manoj Kumar R, K. Agrawal, **D. Lahiri**, in “Hybrid and Hierarchical Composite Materials”, Editors: C.-S. Kim, C. Randow, T. Sano, Springer, ISBN: 978-3-319-12867-2.
3. “Processing and Nanomechanical Properties of Hydroxyapatite-Nanotube Biocomposite”, **D. Lahiri**, A. Agarwal, in “Biosurfaces: A Materials Science and Engineering Perspective”, Editors: Kantesh Balani, Vivek Verma, Arvind Agarwal, and Roger Narayan, Wiley & Sons, ISBN: 978-1-118-29997-5.
4. “Boron Nitride Nanotubes as Nanofillers/Reinforcement for Polymer, Ceramic, and Metal Matrix Composites”, **D. Lahiri**, A. Agarwal, in “Nanotubes and Nanosheets: Functionalization and Applications of Boron Nitride and Other Nanomaterials”, Editor: Ying(lan) Chen, CRC Press, Taylor and Francis Group, ISBN: 9781466598096.

#### **PEER REVIEWED JOURNAL ARTICLES (Published/Accepted)**

75. A. Bisht, M. Srivastava, R.M. Kumar, I. Lahiri, **D. Lahiri**, “Strengthening mechanism in graphene nanoplatelets reinforced aluminum composite fabricated through spark plasma sintering”, **Materials Science and Engineering A**, Vol. 695, 2017, pp. 20-28. ([Journal Impact Factor: 2.647](#))
74. R.M. Kumar, P. Gupta, S.K. Sharma, A. Mittal, M. Sekhar, V. Kumar, B.V. Manoj Kumar, P. Roy, **D. Lahiri**, “Sustained drug release from surface modified UHMWPE for acetabular cup lining in total hip implant”, **Materials Science and Engineering C**, Vol. 77, 2017, pp. 649-661. ([Journal Impact Factor: 3.42](#))
73. A. Nieto, A. Bisht, **D. Lahiri**, C. Zhang, A. agarwal, “Graphene reinforced metal and ceramic matrix composites: a review”, **International Materials Review**, Vol. 62, 2017, pp. 241-302. ([Journal Impact Factor: 7.914](#))

72. R. Kumar, R.M. Kumar, **D. Lahiri**, I. Lahiri, "Thermally reduced graphene oxide film on soda lime glass as transparent conducting electrode", **Surfaces and Coatings Technology**, Vol. 309, 2017, pp. 931-937. **(Journal Impact Factor: 2.139)**
71. P. Gupta, **D. Lahiri**, "Aligned carbon nanotube containing scaffolds for neural tissue regeneration", **Neural Regeneration Research**, Vol. 11, 2016, pp. 1062-1063. **(Journal Impact Factor: 1.240)**
70. V. Kumar, N. Kumar, P.Roy, **D. Lahiri**, I Lahiri, "Emergence of fluorescence in boron nitride nanoflakes and its application in bioimaging", **RSC Advances**, Vol. 6, 2016, pp. 48025. **(Journal Impact Factor: 3.840)**
69. P. Gupta, M. Rajput, N. Singla, V. Kumar, **D. Lahiri**, "Electric field and current assisted alignment of CNT inside polymer matrix and its effects on electrical and mechanical properties", **Polymer**, Vol. 89, 2016, pp. 119-127. **(Journal Impact Factor: 3.562)**
68. S. Nayak, B. Bhushan, P. Gopinath, R.D. agarwal, R. Jayaganthan, **D. Lahiri**, "Strengthening of Mg based alloy through grain refinement for orthopaedic application", **Journal of the Mechanical Behavior of Biomedical Materials**, Vol. 59, 2016, pp. 57-70. **(Journal Impact Factor: 3.417)**
67. R.M. Kumar, K.K. Kunat, s. Singh, B. Bhushan, P. Gopinath, **D. Lahiri**, "Electrophoretic deposition of hydroxyapatite coating on Mg-3Zn alloy for orthopaedic application", **Surface and Coatings Technology**, Vol. 287, 2016, pp. 82-92. **(Journal Impact Factor: 1.998)**
66. A.K.Keshri, L. Behl, **D. Lahiri**, G.S. Duikravich, A. Agarwal, "Dry Sliding Wear Behavior of Hafnium-Based Bulk Metallic Glass at Room and Elevated Temperatures", **Journal of Materials Engineering and Performances**, Vol. 25, 2016, pp. 3931-3937. **(Journal Impact Factor: 1.094)**
65. P. Gupta, S. Sharan, P. Roy, **D. Lahiri**, "Aligned Carbon Nanotube Reinforced Polymeric Scaffolds with Electrical Cues for Neural Tissue Regeneration", **Carbon**, Vol. 95, 2015, pp. 715-724. **(Journal Impact Factor: 6.190)**
64. K. Saini, R.M. Kumar, **D. Lahiri**, I. Lahiri, "Quantifying Bonding Strength of CuO Nanotubes with Substrate Using Nano-Scratch Technique", **Nanotechnology**, Vol. 26, 2015, pp. 305701. **(Journal Impact Factor: 3.672)**
63. R.M. Kumar, S. Sharma, B.V.M. Kumar, **D. Lahiri**, "Effects of Carbon Nanotube Aspect Ratio on Strengthening and Tribological Behaviour of Ultra High Molecular Weight Polyethylene Composite", **Composites A**, Vol. 76, 2015, pp. 62-72. **(Journal Impact Factor: 3.012)**
62. S.Singh, R. Manoj Kumar, K.K. Kuntal, P. Gupta, S. Das, R. Jayaganthan, P. Roy, **D. Lahiri**, "Sol-Gel Derived Hydroxyapatite Coating on Mg-3Zn Alloy for Orthopedic Application", **JOM**, Vol. 67, 2015, pp. 702-712. **(Journal Impact Factor: 1.401)**
61. **D. Lahiri**, J. Karp, A.K. Keshri, C. Zhang, G.S. Dulikravich, L.J. Kecskes, A. Agarwal, "Scratch Induced Deformation Behavior of Hafnium Based Bulk Metallic Glass at Multiple Load Scales", **Journal of Noncrystalline Solids**, Vol. 410, 2015, pp. 118-126. **(Journal Impact Factor: 1.716)**
60. P. Trivedi, S. Goel, S. Das, R. Jayaganthan, **D. Lahiri**, P. Roy, "Biocompatibility of Ultrafine Grained Zircaloy-2 Produced by Cryorolling for Medical Applications", **Material Science and Engineering C**, Vol. 46, 2015, pp. 309-315. **(Journal Impact Factor: 2.736)**
59. S. Chouksey, A.Sil, **D. Lahiri**, I. Lahiri, "Atmospheric oxidation effect of silicon-carbon nanotube anode on Li-ion battery performance", **Nanomaterials and Energy**, Vol. 4, 2015, pp. 1-20.
58. K.S. Suresh, **D. Lahiri**, A. Agarwal, S. Suwas, "Microstructure Dependent Elastic Modulus Variation in NiTi Shape Memory Alloy", **Journal of Alloys and Compounds**, Vol. 633, 2015, pp. 71-74. **(Journal Impact Factor: 2.726)**
57. K.Jha, N. Suksawang, **D. Lahiri**, A. Agarwal, "A Novel Energy-based Method to Evaluate Indentation Modulus and Hardness of Cementitious Materials from Nanoindentation Load-Displacement Data", **Materials and Structures**, 2014, DOI: DOI 10.1617/s11527-014-0367-7. **(Journal Impact Factor: 1.390)**
56. **D. Lahiri**, F. Hec, M. Thiesse, A. Durygin, C. Zhang, A. Agarwal, "Nanotribological Behavior of Graphene Nanoplatelet Reinforced Ultra High Molecular Weight Polyethylene Composites", **Tribology International**, Vol. 70, 2014, pp. 165-169. **(Journal Impact Factor: 2.124)**

55. A. Nieto, A. Kumar, **D. Lahiri**, C. Zhang, S. Seal, A. Agarwal, "Oxidation Behavior of Graphene NanoPlatelets Reinforced Tantalum Carbide Composites in High Temperature Plasma Flow", **Carbon**, 2013, Vol. 67, 2014, pp. 398-408. ([Journal Impact Factor: 6.160](#))
54. S. Das, **D. Lahiri**, A. Agarwal, W. Choi, "Interfacial bonding characteristics between graphene and dielectric substrates", **Nanotechnology**, Vol. 25, 2014, pp. 045707. ([Journal Impact Factor: 3.672](#))
53. S.B. Pitchuka, B. Boesl, C. Zhang, D. Lahiri, A. Nieto, G. Sundararajana, A. Agarwal, "Dry sliding wear behavior of cold sprayed aluminium amorphous/nanocrystalline alloy coatings", **Surface and Coatings Technology**, Vol. 238, 2014, pp. 118-125. ([Journal Impact Factor: 2.199](#))
52. S.B. Pitchuka, **D. Lahiri**, G. Sundararajan, A. Agarwal, "Scratch Induced Deformation Behavior of Cold Sprayed Aluminum Amorphous/Nanocrystalline Coatings at Multiple Load Scales", **Journal of Thermal Spray Technoogy**, Vol. 23, 2014, pp. 502-513. ([Journal Impact Factor: 1.481](#))
51. A. Gupta, S. Barkam, D. Lahiri, R. Balasubramanian, K. Balani, "Effect of Alumina Dispersion on Microstructural and Nanomechanical Properties of Pulse Electrodeposited Nickel-Alumina Composite Coatings", **Journal of Materials Science and Technology**, Vol. 30, 2014, pp. 808-813. ([Journal Impact Factor: 1.610](#))
50. **D. Lahiri**, V. Singh, G.R. Rodrigues, T. M. Haas Costa, M.R. Gallas, S.R. Bakshi, S. Seal, A. Agarwal, "Ultrahigh-pressure consolidation and deformation of tantalum carbide at ambient and high temperatures", **Acta Materialia**, Vol. 61, 2013, pp. 4001-4009. ([Journal Impact Factor: 3.940](#))
49. B. Boesl, **D. Lahiri**, S. Behdad, A. Agarwal, "Direct Observation of Carbon Nanotube Induced Strengthening in Aluminum Composite via In situ Tensile Tests", **Carbon**, Vol. 69, 2013, pp. 79-85. ([Journal Impact Factor: 6.160](#))
48. **D. Lahiri**, A. Hadjikhani, C. Zhang, T. Xing, L. Hua Li, Y. Chen, A. Agarwal, "Boron nitride nanotubes reinforced aluminum composites prepared by spark plasma sintering: Microstructure, mechanical properties and deformation behaviour", **Materials Science and Engineering: A**, Vol. 574, 2013, pp. 149-156. ([Journal Impact Factor: 2.409](#))
47. **D. Lahiri**, P.K. Gill, S. Scudino, C. Zhang, V. Singh, J. Karthikeyan, N. Munroe, S. Seal, A. Agarwal, "Cold Sprayed Aluminum Based Glassy Coating: Synthesis, Wear and Corrosion Properties", **Surfaces and Coating Technology**, Vol. 232, 2013, pp. 33-40. ([Journal Impact Factor: 2.199](#))
46. S. Das, **D. Lahiri**, A. Agarwal, W. Choi, "Measurements of the adhesion energy of graphene to metallic substrates", **Carbon**, Vol. 59, 2013, pp. 121-129. ([Journal Impact Factor: 6.160](#))
45. A. Nieto, **D. Lahiri**, A. Agarwal, "Nano Dynamic Mechanical Behavior of Graphene NanoPlatelets Reinforced Tantalum Carbide", **Scripta Materialia**, Vol. 69, 2013, pp. 678-681. ([Journal Impact Factor: 2.968](#))
44. A. Nieto, **D. Lahiri**, A. Agarwal, "Graphene NanoPlatelet Reinforced Tantalum Carbide Consolidated by Spark Plasma Sintering: Microstructure and Mechanical Properties" **Materials Science and Engineering A**, Vol. 582, 2013, pp. 338-346. ([Journal Impact Factor: 2.409](#))
43. **D. Lahiri**, E. Khalegi, S.R. Bakshi, W. Li, E.A. Olevsky, A. Agarwal, "Graphene Induced Strengthening in Spark Plasma Sintered Tantalum Carbide-Nanotube Composite", **Scripta Materialia**, Vol. 68, 2013, pp. 285-288. ([Journal Impact Factor: 2.968](#))
42. C. Zhang, U. Chaudhary, **D. Lahiri**, A. Godavarty, A. Agarwal, "Photo-catalytic Activity of Spark Plasma Sintered TiO<sub>2</sub>-Graphene Nanoplatelet Composite System", **Scripta Materialia**, Vol. 68, 2013, pp. 719-722 ([Journal Impact Factor: 2.968](#)).
41. A. Gupta, G. Tripathi, **D. Lahiri**, K. Balani, "Compression Molding of UHMWPE-HA-Al<sub>2</sub>O<sub>3</sub>-CNT Hybrid Composites for Hard Tissue Replacement", **Journal of Materials Science & Technology**, Vol. 29, 2013, pp. 514-522. ([Journal Impact Factor: 1.198](#))
40. V. Kumar, A. Gupta, **D. Lahiri**, K. Balani, "Nanomechanical Behavior Eliciting Serrated Yielding in Thermomechanically Processed Novel Mg-9Li-7Al-1Sn and Mg-9Li-5Al-3Sn-1Zn Alloys", **Journal of Physics D: Applied Physics**, Vol. 46, 2013, pp. 145304. ([Journal Impact Factor: 2.521](#))

39. K.K. Jha, N. Suksawang, **D. Lahiri**, A. Agarwal, "Evaluating initial unloading stiffness from elastic work-of-indentation measured in a nanoindentation experiment", **Journal of Materials Research**, Vol. 28, 2013, pp. 789-797. (**Journal Impact Factor: 1.815**)
38. **D. Lahiri**, S. Das, W. Choi, A. Agarwal, "Unfolding the Damping Behavior of Multilayer Graphene Membrane in the Low-Frequency Regime", **ACS Nano**, Vol. 6, 2012, pp. 3992-4000. (**Journal Impact Factor: 12.033**)
37. **D. Lahiri**, R. Dua, C. Zhang, I. Socarras-Novoa, A. Bhat, S. Ramaswamy, A. Agarwal, "Graphene Nano Platelet Induced Strengthening of Ultra High Molecular Weight Polyethylene and Biocompatibility in-vitro", **ACS Applied Materials and Interfaces**, Vol. 4, 2012, pp. 2234-2241. (**Journal Impact Factor: 5.900**)
36. **D. Lahiri**, V. Singh, L. Li, T. Xing, S. Seal, Y. Chen, A. Agarwal, "Insight into Reactions and Interface Between Boron Nitride Nanotube and Aluminum", **Journal of Materials Research**, Vol. 27, 2012, pp. 2760-2770. (**Journal Impact Factor: 1.815**)
35. **D. Lahiri**, S. Ghosh, A. Agarwal, "Carbon Nanotube Reinforced Hydroxyapatite composite in Orthopedic Application: A Review", **Materials Science and Engineering C**, Vol. 32, 2012, pp. 1727-1758. (**Journal Impact Factor: 2.736**) **Ranked 11 out of 25 hottest articles published in MSEC for the full year of 2012**  
<http://top25.sciencedirect.com/subject/materials-science/15/journal/materials-science-and-engineering-c/09284931/archive/42/>
34. **D. Lahiri**, A. Agarwal, "Scratch Based Technique for Quantifying Adhesion at Nano and Micro-scales", **Advanced Materials and Processes**, April, 2012, pp. 22-27.
33. A. Nieto, **D. Lahiri**, A. Agarwal, "Synthesis and Properties of Bulk Graphene Nanoplatelets Consolidated by Spark Plasma Sintering", **Carbon**, Vol. 50, 2012, pp. 4068-4077. (**Journal Impact Factor: 6.160**)
32. M. Bao, C. Zhang, **D. Lahiri**, A. Agarwal, "Tribological Behavior of Plasma Sprayed Al-Si Composite Coatings Reinforced with Nanodiamond", **JOM**, Vol. 64, 2012, pp. 702-708. (**Journal Impact Factor: 1.401**)
31. K.K. Jha, N. Suksawang, **D. Lahiri**, A. Agarwal, "Energy Based Analysis of Nanoindentation Curves for Cementitious Materials", **ACI Materials Journal**, vol. 109, 2012, pp. 81-90. (**Journal Impact Factor: 1.123**)
30. **D. Lahiri**, A.P. Benaduce, L. Kos, A. Agarwal, "Quantification of Carbon Nanotube Induced Adhesion of Osteoblast on Hydroxyapatite using Nano-Scratch Technique", **Nanotechnology**, Vol. 22, 2011, pp. 355703 (9 pp) (**Journal Impact Factor: 3.672**).

Highlighted in "Nanotech Web" (<http://nanotechweb.org/cws/article/lab/46915>).

29. I. Lahiri\*, **D. Lahiri**\*, S. Jin, A. Agarwal, W. Choi, "Carbon Nanotubes: How Strong is Their Bond with the Substrate?" **ACS Nano**, Vol. 5(2), 2011, pp. 780-787. (**Journal Impact Factor: 12.033**)

\* Co-first Authors.

Highlighted in "Nanowerk" (<http://www.nanowerk.com/spotlight/spotid=19707.php>).

28. **D. Lahiri**, V. Singh, A.K. Keshri, S. Seal, A. Agarwal, "Apatite formability of boron nitride nanotube", **Nanotechnology**, Vol. 22, 2011, pp. 205601 (**Journal Impact Factor: 3.672**).
27. S. Facca\*, **D. Lahiri**\*, F. Fioretti, N. Messadeq, D. Mainard, N. Jessel, A. Agarwal, "In Vivo Osseointegration of Nano-Designed Composite Coatings on Titanium Implants", **ACS Nano**, 2011, Vol. 5, pp. 4790-4799 (**Journal Impact Factor: 12.033**).

\* Co-first Authors.

26. **D. Lahiri**, V. Singh, A.P. Benaduce, S. Seal, L. Kos, A. Agarwal, "Boron nitride nanotube reinforced hydroxyapatite composite: mechanical and tribological performance and in-vitro biocompatibility to osteoblasts", **Journal of the Mechanical Behavior of Biomedical Materials**, Vol. 4, 2011, pp. 44-56. (This paper was ranked amongst top 25 hottest articles published in this journal in the year 2011  
<http://top25.sciencedirect.com/subject/materials-science/15/journal/journal-of-the-mechanical-behavior-of-biomedical-materials/17516161/archive/36/>) (**Journal Impact Factor: 3.048**).



25. **D. Lahiri**, A.P. Benaduce, F. Rouzaud, J. Solomon, A.K. Keshri, L. Kos, A. Agarwal, "Wear Behavior and In-vitro Cytotoxicity of Wear Debris Generated from Hydroxyapatite-Carbon Nanotube Composite Coating" **Journal of Biomedical Materials Research Part A**, Vol. 96A, 2011, pp. 1-12. (*This Paper has been cited in the website of 'The International Council on Nanotechnology' and included in 'nanoEHS Virtual Journal'.*) (**Journal Impact Factor: 2.841**)
24. A.K. keshri, **D. Lahiri**, A. Agarwal, "Carbon nanotubes improve the adhesion strength of a ceramic splat to the steel substrate", **Carbon**, Vol. 49, 2011, pp. 4340-4347. (**Journal Impact Factor: 6.160**)
23. K. Balani, R.R. Patel, A.K. Keshri, **D. Lahiri**, A. Agarwal, "Multi-scale Hierarchy of Chelydra serpentina: Microstructure and Mechanical Properties of Turtle Shell", **Journal of the Mechanical Behavior of Biomedical Materials**, Vol. 4, 2011, pp. 1440-1451. (**Journal Impact Factor: 3.048**)
22. H. Couvy, **D. Lahiri**, J. Chen, A. Agarwal, G. Sen, "Nano-hardness and Young's modulus of nano-polycrystalline diamond", **Scripta Materialia**, 2011, Vol. 64, pp. 1019-1022. (**Journal Impact Factor: 2.968**)
21. S.R. Bakshi, V. Musharamthota, D.A. Virzi, A.K. Keshri, **D. Lahiri**, V. Singh, S. Seal, A. Agarwal, " Spark plasma sintered tantalum carbide-carbon nanotube composite: effect of pressure, carbon nanotube length and dispersion technique on microstructure and mechanical properties", **Material Science and Engineering A**, 2011, Vol. 528, 2538-2547. (**Journal Impact Factor: 2.409**)
20. S.R. Bakshi, V. Musaramthota, **D. Lahiri**, V. Singh, S. Seal, A. Agarwal, "Spark Plasma Sintered Tantalum Carbide: Effect of Pressure and nano-Boron Carbide Addition on Microstructure and Mechanical properties", **Materials Science and Engineering A**, Vol. 528, 2011, pp. 1287-1295. (**Journal Impact Factor: 2.409**)
19. **D. Lahiri**, V. Singh, A. K. Keshri, S. Seal, A. Agarwal, "Carbon Nanotube Toughened Hydroxyapatite by Spark Plasma Sintering: Microstructural Evolution and Multi-Scale Tribological Properties", **Carbon**, Vol. 48, 2010, pp. 3103-3120. (**Journal Impact Factor: 6.160**)
18. **D. Lahiri**, F. Rouzaud, T. Richard, A. K. Keshri, S.R. Bakshi, L. Kos, A. Agarwal, "Boron Nitride Nanotube Reinforced Polylactide-Polycaprolactone Copolymer Composite: Mechanical Properties and Cytocompatibility with Osteoblasts and Macrophages In Vitro", **Acta Biomaterialia**, Vol. 6, 2010, pp. 3524-3533. (*This Paper has been cited in the website of 'The International Council on Nanotechnology' and included in 'nanoEHS Virtual Journal' <http://icon.rice.edu/details.cfm?rid=48335>.*) (**Journal Impact Factor: 5.684**)
17. S.R. Bakshi, **D. Lahiri**, R.R. Patel, A. Agarwal, "Nanoscratch behavior of carbon nanotube reinforced aluminum coatings", **Thin Solid Films**, Vol. 518, 2010, pp. 1703-1711. (**Journal Impact Factor: 1.687**)
16. S. R. Bakshi, **D. Lahiri**, A. Agarwal, "Carbon Nanotube Reinforced Metal Matrix Composite – A Review", **International Materials Review**, Vol. 55, 2010, pp. 41-64. (**Journal Impact Factor: 6.552**)
15. 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" **Material Science and Engineering C**, Vol. 30, 2010, pp. 1162-1169. (**Journal Impact Factor: 2.736**)
14. K. Balani, S.R. Bakshi, **D. Lahiri**, A. Agarwal, "Grain Growth Behavior of Aluminum Oxide Reinforced with Carbon Nanotubes During Plasma Spraying and Post-Spray", **International Journal of Applied Ceramic Technology**, Vol. 7, 2010, pp. 846-855. (**Journal Impact Factor: 1.215**)
13. **D. Lahiri**, F. Rouzaud, S. Namin, A.K. Keshri, J.J. Valdes, L. Kos, N. Tsoukias, A. Agarwal, "Carbon Nanotube Reinforced Polylactide-Caprolactone Copolymer: Mechanical Strengthening and Interaction with Human Osteoblasts in Vitro", **ACS Applied Materials and Interfaces**, Vol. 1, 2009, pp. 2470-2476. (**Journal Impact Factor: 5.900**)
12. **D. Lahiri**, S.R. Bakshi, A. K. Keshri, Y. Liu, A. Agarwal, "Dual Strengthening Mechanism Induced by Carbon Nanotube in Roll Bonded Aluminum Composites", **Materials Science and Engineering A**, Vol. 523, 2009, pp. 263-270. (**Journal Impact Factor: 2.409**)

11. K. Balani, R. Batista, **D. Lahiri**, A. Agarwal, "The Hydrophobicity of a Lotus Leaf: A Nanomechanical and Computational Approach", **Nanotechnology**, Vol. 20, 2009, pp. 305707 (9pp). (**Journal Impact Factor: 3.672**)
10. T. Laha, Y. Chen, **D. Lahiri**, A. Agarwal, "Tensile Properties of Carbon Nanotube Reinforced Aluminum Nanocomposite Fabricated by Plasma Spray Forming", **Composite Part A**, Vol. 40, 2009, pp. 589-594. (**Journal Impact Factor: 3.012**)
9. J. Tercero, S. Namin, **D. Lahiri**, K. Balani, N. Tsoukias, A. Agarwal, "Effect of Carbon Nanotube and Aluminum Oxide Addition on Plasma Sprayed Hydroxyapatite Coating's Mechanical Properties and Biocompatibility", **Materials Science and Engineering C**, Vol. 29, 2009, pp. 2195-2202. (**Journal Impact Factor: 2.736**)
8. K. Balani, **D. Lahiri**, A. K. Keshri, S.R. Bakshi, J.E. Tercero, A. Agarwal, "The Nano-scratch Behavior of Biocompatible Hydroxyapatite Reinforced with Aluminum Oxide and Carbon Nanotubes", **JOM**, Vol. 61, 2009, pp. 63-66. (**Journal Impact Factor: 1.401**)
7. **D. Lahiri**, S.V. Ramana Rao, R.K. Srivastava, G.V.S. Hemantha Rao, "Study on Sintering Kinetics and Activation Energy of  $UO_2$  Pellets using Three Different Methods", **Journal of Nuclear Materials**, Vol. 357, 2006, pp. 88-96. (**Journal Impact Factor: 2.016**)
6. K. Kapoor, **D. Lahiri**, I.S. Batra, S.V.R. Rao, T. Sanyal, "X-ray Diffraction Line Profile Analysis for Defect Study in Cu-1%Cr-0.1%Zr Alloy", **Materials Characterization**, Vol. 54, Feb. 2005, pp.131-140. (**Journal Impact Factor: 1.925**)
5. K. Kapoor, **D. Lahiri**, S.V. Ramana Rao, T. Sanyal, "X-ray Diffraction Line Profile Analysis for Defect Study in Zr-2.5%Nb Material", **Bulletin of Materials Science**, Vol. 27, Feb. 2004, pp.39-48. (**Journal Impact Factor: 0.87**)
4. K. Kapoor, **D. Lahiri**, T. Sanyal, B.P. Kashyap, "Texture Evolution in two phase Zr-2.5 wt.% Nb through Modified Route", **Material Science and Technology**, Vol. 20, Oct. 2004, pp. 1281-1298. (**Journal Impact Factor: 0.804**)
3. I. Lahiri, **D. Lahiri (Mondal)**, S. Bhargava, "Effect of Prior  $\beta$  Processing on Superplasticity of  $(\alpha+\beta)$  Thermomechanically Treated Ti-6Al-4V Alloy" **Materials & Manufacturing Processes**, Vol. 18, 2003, pp. 621-635. (**Journal Impact Factor: 1.486**)
2. K. Kapoor, **D. Lahiri**, S.V. Ramana Rao, T. Sanyal, "Influence of Crystallographic Texture on X-ray Residual Stress Measurement for Ti-3Al-2V Tube Material", **Journal of Testing and Evaluation (ASTM)**, Vol. 31, Nov. 2003, pp.465-471. (**Journal Impact Factor: 0.279**)
1. K. Kapoor, **D. Lahiri**, C. Padmaprabu, T. Sanyal, "X-ray Measurement of Near Surface Residual Stress in Textured Cold-Worked Stress Relieved Zr-2.5%Nb Pressure Tube Material", **Journal of Nuclear Materials**, Vol. 303, 2002, pp.147-155. (**Journal Impact Factor: 2.016**)

#### CONFERENCE PRESENTATIONS

85. A. Bisht, P. Gupta, **D. Lahiri**, "Nanodiamond: A Potential Reinforcement for Epoxy Composites", Pan American Materials Congress, TMS Annual Meeting & Exhibition, San Diego, CA, USA, 26 Feb.-2 Mar. 2017.
84. A. Bisht, P. Gupta, **D. Lahiri**, "Influence of Carbon Nanotube and Graphene on Mechanical and Damping Characteristics of Epoxy Matrix Composite- A Comparative Analysis", Pan American Materials Congress, TMS Annual Meeting & Exhibition, San Diego, CA, USA, 26 Feb.-2 Mar. 2017.

83. P. Gupta, M. Kumaraswamy, P. Roy, **D. Lahiri**, "Aligned Carbon Nanotubes Reinforced Electrospun Polymeric Scaffold for Peripheral Nerve Repair", TMS Annual Meeting & Exhibition, San Diego, CA, USA, 26 Feb.-2 Mar. 2017.
82. P. Gupta, M. Kumaraswamy, P. Roy, **D. Lahiri**, "Comparative Analysis of Neural Cell behaviour on Carbon Nanofiller Reinforced Polymeric Substrates", Pan American Materials Congress, TMS Annual Meeting & Exhibition, San Diego, CA, USA, 26 Feb.-2 Mar. 2017.
81. R.M. Kumar, P. Gupta, P. Roy, **D. Lahiri**, "Surface Modified Drug Releasing Total Hip Implant" 2017 TMS Annual Meeting and Exhibition, San Diego, CA, USA, 26 Feb.-2 Mar. 2017.
80. S. Jaiswal, P. Gupta, P. Roy, **D. Lahiri**, "Magnesium Based Biodegradable Composites for Orthopaedic Application", TMS Annual Meeting 2017, San Diego, California, USA, 26 Feb. to 2 Mar. 2017.
79. A. Sharma, P. Gupta, M. Kumarasamy, P. Roy, **D. Lahiri**, "Bioengineered Smart Skin Tissue Substitutes for Deep Wound Healing", 54th National Metallurgists' Day, IIT Kanpur, India, 11-14 Nov., 2016.
78. A. Dubey, S. Jaiswal, **D. Lahiri**, "Mechanical Integrity of Biodegradable Mg-HA Composite during in vitro Immersion", 54th National Metallurgists' Day IIT Kanpur, India, 11-14 Nov., 2016.
77. P. Gupta, A. Shrivastava, P. Jha, M. Kumarasamy, P. Roy, **D. Lahiri**, "Anisotropically Electroactive Carbon Nanofillers Reinforced Polymeric Scaffolds for Neural Tissue Engineering", 54th National Metallurgists' Day, IIT Kanpur, India, 11-14 Nov., 2016.
76. P. Gupta, M. Kumarasamy, P. Roy, **D. Lahiri**, "Development of Aligned Carbon Nanotubes Reinforced Electrospun Polymer Scaffold for Sciatic Nerve Repair", 54th National Metallurgists' Day, IIT Kanpur, India, 11-14 Nov., 2016.
75. A. Bisht, M. Srivastava, R. Manoj Kumar, I. Lahiri, **D. Lahiri**, "Effect of Graphene Nanoplatelets (GNP) Addition on Aluminium Based Composite Fabricated by Spark Plasma Sintering", 54th National Metallurgists' Day IIT Kanpur, India, 11-14 Nov., 2016.
74. A. Bisht, **D. Lahiri**, "Thermal and Mechanical Properties of Nanodiamond Reinforced Epoxy Composites", 54th National Metallurgists' Day IIT Kanpur, India, 11-14 Nov., 2016.
73. R. Kumar, R.M. Kumar, D. Lahiri, I. Lahiri, "Quantification of temperature-time dependent bonding strength of thermally reduced graphene oxide with soda lime glass as transparent conducting electrode" 2nd International Conference on Soft Materials (ICSM-2016), Jaipur 14-16 December, 2016.
72. R. Kumar, R.M. Kumar, **D. Lahiri**, I. Lahiri, "Measuring the bonding strength of thermally reduced graphene oxide on soda lime glass using nano scratch technology" International Conference on Material Sciences (SCICON' 16), Coimbatore, India, 19-21st December, 2016.
71. R.M. Kumar, P. Gupta, **D. Lahiri**, "Sustained Drug Release from Surface Modified UHMWPE for Drug Eluting Orthopaedic Applications" 54th Annual Technical Meeting of Indian Institute of Metals, IIT Kanpur, Indian, 13th-16th Nov., 2016.
70. R.M. Kumar, P. Gupta, S.K. Sharma, V. Kumar, B.V. Manoj Kumar, P. Roy, **D. Lahiri**, "Surface modification of ultra high molecular weight polyethylene for drug eluting orthopaedic implant applications" 3rd International Conference on BioTribology (ICoBT 2016) at Imperial College London, London, UK, 11-14 September, 2016
69. **D. Lahiri**, Invited talk on "Drug Releasing Acetabular Cup Lining – A New Dimension in Total Hip Implant", Tenth National Frontiers of Engineering Symposium, IIT Kanpur, India, 23-25 Jun., 2016.
68. **D. Lahiri**, Invited talk on "Evaluation of Cell Adhesion Mechanism at Multiple Scale Lengths" in 8th Indo-German Frontiers of Engineering Symposium – a bilateral symposium between DST, India and Humboldt Foundation Germany, at Potsdam, Germany, 19-22 May, 2016.
67. Manoj Kumar R, K.K. Kuntal, S. Singh, P. Gupta, B. Bhushan, P. Gopinath, **D. Lahiri**, "Electrophoretic Coating of Nanostructured Hydroxyapatite on Mg-3Zn Alloy for Orthopaedic Application", International Conference on Metals and Materials Research (ICMR 2016), Indian Institute of Science, Bangalore, India. 20 -22 June, 2016.



66. P. Gupta, S. Sharan, P. Roy, **D. Lahiri**, Invited talk on "Aligned Carbon Nanotube Reinforced Polymeric Scaffolds With Electrical Cues for Neural Tissue Engineering", Challenges in Product Development of Medical Implants and Devices, IEST, Shibpur, India, 18-19 Dec., 2015.
65. **D. Lahiri**, Invited talk on "Nano-Scratch Based Technique: Novel Method for Quantifying Adhesion Strength at Sub-Micron Scale", Nanoyantrika-2015, Trivundrum, India, 20-22 Sep., 2015.
64. Manoj Kumar R, S.K. Sharma, V. Kumar, B.V. Manoj Kumar, **D. Lahiri**, "Surface modification of ultra high molecular weight polyethylene for drug eluting orthopaedic implant applications", 53rd National Metallurgists' Day, Coimbatore, India, 13-16 Nov., 2015.
63. Manoj Kumar R, P.K. Gupta, **D. Lahiri**, "Study on Mechanical and Tribological Properties of Graphene Nanoplatelet Reinforced Ultra High Molecular Weight polyethylene Composite", 53rd National Metallurgists' Day, Coimbatore, India, 13-16 Nov., 2015.
62. V. Kumar, N. Kumar, P. Roy, **D. Lahiri**, I. Lahiri, "Synthesis and Emergence of Fluorescence Behavior in h-BN Nanoflakes", 53rd National Metallurgists' Day, Coimbatore, India, 13-16 Nov., 2015.
61. A. Bisht, D. Lahiri, "Carbon Nanofiller Reinforced Epoxy Composites for Structural Application", 53rd National Metallurgists' Day, Coimbatore, India, 13-16 Nov., 2015.
60. S. Jaiswal, Manoj Kumar R, **D. Lahiri**, "Corrosion and Mechanical Behaviour of Magnesium-based Biodegradable composite for Orthopaedic application", 53rd National Metallurgists' Day, Coimbatore, India, 13-16 Nov., 2015.
59. P. Gupta, M. Rajput, N. Singla, V. Kumar, **D. Lahiri**, "Electric field and current assisted alignment of CNTs inside polymer matrix and its effects on electrical and mechanical properties", 53rd National Metallurgists' Day, Coimbatore, India, 13-16 Nov., 2015.
57. P. Gupta, A. Agrawal, R. Varshney, S. Beniwal, S. Manhas, P. Roy, **D. Lahiri**, "Comparison of Neural Cell Adhesion and Neurite Outgrowth on Carbon Nanofiller Reinforced Biomimetic Polymeric Substrates", International Conference on Nanostructured Polymeric Materials and Polymer Nanocomposites, Kottayam, India, 13-15 Nov., 2015.
56. P. Gupta, S. Sharan, P. Roy, **D. Lahiri**, "Aligned Carbon Nanotube Reinforced Polymeric Scaffolds with Electrical Cues for Neural Tissue Engineering", International Conference on Nanostructured Polymeric Materials and Polymer Nanocomposites, Kottayam, India, 13-15 Nov., 2015.
55. **D. Lahiri**, Keynote Talk on "*Biomechanical Evaluation at Bone-Implant Interface*", in International Conference on Emerging trends in Manufacturing, Engines and Modelling, Dhule, Maharashtra, 27-28 February, 2015.
54. **D. Lahiri**, A. Agarwal, Invite talk on "*Nano-Scratch Based Technique: Novel Method for Quantifying Adhesion Strength at Sub-Micron Scale*", 12th Asian Forum for Materials Testing, Zwick-Roell, Gurgaon, India, 19-23 January, 2015.
53. **D. Lahiri**, Invited talk on "*Probing Into Bone-Implant Interface: Materials Engineering Approach*", Invited Talk in Molecular Signalling: Recent Trends in Biomedical and Translational Research - ICMS: RTBTR-2014, IIT Roorkee, India, 17-19 December, 2014.
52. Manoj Kumar R, S.K. Sharma, A.D. Ray, D. Natu, S. Tikko, B.V. Manoj Kumar, **D. Lahiri**, "*Effects of Carbon Nano Tube Morphology on Tribological Behavior of UHMWPE Composite for Total Hip Joint*", International conference on Polymeric Biomaterials, Bioengineering and Biodiagnostics, New Delhi, India, 27 – 30 Oct., 2014.
51. P. Gupta, V. Kumar, **D. Lahiri**, "*The effects of CNT alignment on electrical conductivity and mechanical properties of CNT/chitosan nanocomposite*", International conference on Polymeric Biomaterials, Bioengineering and Biodiagnostics, New Delhi, India, 27 – 30 Oct., 2014.
50. Manoj Kumar R, K. Agarwal, S.K. Sharma, .D. Ray, D. Natu, S. Tikko, B.V. Manoj Kumar, **D. Lahiri**, "*Carbon Nanotube/Ultra High Molecular Weight Polyethylene Composite for Hip Joint – Influence of CNT Morphology on Wear Behavior*", 52<sup>nd</sup> Annual Technical Meeting of Indian Institute of Metals, Pune, India, 12-15 Nov., 2014.

49. P. Gupta, S. Das, P. Roy, **D. Lahiri**, "*Aligned Multiwalled Carbon Nanotubes/Chitosan Electrospun Nanofibrous Scaffold for Neural Tissue Regeneration*", 52<sup>nd</sup> Annual Technical Meeting of Indian Institute of Metals, Pune, India, 12-15 Nov., 2014.
48. S. Singh, K.K. Kuntal, K. Agarwal, **D. Lahiri**, "*Sol-gel Coated Hydroxyapatite on Magnesium-Zinc Alloy for Orthopaedic Applications*", 52<sup>nd</sup> Annual Technical Meeting of Indian Institute of Metals, Pune, India, 12-15 Nov., 2014.
47. S. Nayak, K. Agarwal, R.D. Agarwal, R. Jayagantha, **D. Lahiri**, "*Grain refinement of Mg-Zn Alloy processed through hot rolling for Orthopaedic Applications: Mechanical and corrosion Properties*", 52<sup>nd</sup> Annual Technical Meeting of Indian Institute of Metals, Pune, India, 12-15 Nov., 2014.
46. **D. Lahiri**, A. Agarwal, "*Carbon Nanotubes: How Strong is their Bond with Substrate*", Zwick Forum on Mechanical testing of Lightweight Materials at Universidad Rey Juan Carlos, Madrid, Spain, Madrid, Spain, 9 April 2014.
44. **D. Lahiri**, C. Zhang, R. Dua, F. Hec, M. Thiesse, A. Durygin, S. Ramaswamy, A. Agarwal, "*Graphene Reinforced Ultra High Molecular Weight Polyethylene for Orthopedic Application*", TMS Annual Meeting 2014, San Diego, USA, 16-20 Feb., 2014.
43. **D. Lahiri**, A. Agarwal, "*Nano-Scratch Based Technique: Novel Method for Quantifying Adhesion Strength at Sub-Micron Scale*", Zwick Roell Forum on 'Latest Trends in Materials Testing', IIT Kanpur, India, 27 Jan., 2014.
42. **D. Lahiri**, A. Agarwal, "*Nano-Scratch Based Technique: Novel Method for Quantifying Adhesion Strength at Sub-Micron Scale*", 51<sup>st</sup> Annual Technical Meeting of Indian Institute of Metals, Varanasi, India, 12-15 Nov., 2013.
41. A. Niteto, C. Zhang, **D. Lahiri**, A. Agarwal, "*Spark Plasma Sintered Tantalum Carbide with Graphene NanoPlatelets Reinforcement*", The 8th Pacific Rim International Conference on Advanced Materials and Processing, Hawaii, 4-9 August, 2013.
40. A. Nieto, **D. Lahiri**, A. Agarwal, "*Effect of Graphene NanoPlatelets on Consolidation and Mechanical Properties of Spark Plasma Sintered Tantalum Carbide*", TMS Annual Meeting 2013, San Antonio, Texas, 3-7 Mar, 2013.
39. A. Nieto, **D. Lahiri**, C. Zhang, A. Agarwal, "*Enhancement of Tantalum Carbide Oxidation Resistance in a High Temperature Plasma Flow by Addition of Graphene NanoPlatelets*", TMS Annual Meeting 2013, San Antonio, Texas, 3-7 Mar, 2013. (to be presented)
38. A. Nieto, **D. Lahiri**, A. Agarwal, "*Oxidation Behavior of Graphene NanoPlatelets Reinforced Tantalum Carbide composites in High Temperature Plasma Flow*", 37<sup>th</sup> International Conference and Expo on Advanced Ceramics and Composites, Daytona Beach, Florida, 27 Jan - 1 Feb, 2013.
37. A. Nieto, **D. Lahiri**, C. Zhang, A. Agarwal, "*Graphene NanoPlatelets Reinforced Tantalum Carbide Consolidated by Spark Plasma Sintering*", 37<sup>th</sup> International Conference and Expo on Advanced Ceramics and Composites, Daytona Beach, Florida, 27 Jan - 1 Feb, 2013.
36. **D. Lahiri**, V. Singh, M. Bao, L. Li, S. Seal, Y. Chen, A. Agarwal "*Boron Nitride Nanotube Reinforced Aluminum Nanocomposites*", TMS Annual Meeting & Exhibition, Orlando, Florida, 11-15 Mar., 2012.
35. M. Bao, C. Zhang, **D. Lahiri**, A. Agarwal, "*Tribological Behavior of Plasma Sprayed Al-Si Composite Coatings Reinforced with Different Carbon Allotropes*", TMS Annual Meeting & Exhibition, Orlando, Florida, 11-15 Mar., 2012.
34. N. Mahato, **D. Lahiri**, A. Agharwal, K. Balani, "*Microstructure and Mechanical Properties of Multistructured Peacock Feathers*", TMS Annual Meeting & Exhibition, Orlando, Florida, 11-15 Mar., 2012.
33. **D. Lahiri**, S. Facca, N. Benkirane-Jessel, A. Agarwal, "*In-vivo Modification of Elastic Modulus Gradient at Implant-Bone Interface*", Materials Science & Technology 2011 Conference and Exhibition, Columbus, Ohio, 16-20 Oct. 2011.

32. **D. Lahiri**, A.P. Benaduce, S. Facca, L. Kos, N. Benkirane-Jessel, A. Agarwal, "*In-Vitro and In-Vivo Osteocompatibility Assessment for Carbon Nanotube Reinforced Hydroxyapatite Coatings*", Materials Science & Technology 2011 Conference and Exhibition, Columbus, Ohio, 16-20 Oct. 2011.
31. **D. Lahiri**, A.P. Benaduce, L. Kos, A. Agarwal, "*Carbon Nanotube Induced Enhancement of Osteoblast Adhesion on Bioimplant Surface*" TMS Annual Meeting & Exhibition, San Diego, California, 27 Feb. – 3 Mar., 2011.
30. **D. Lahiri**, V. Singh, A.K. Keshri, S. Seal, A. Agarwal, "*Precipitation and Crystallization of Hydroxyapatite on Boron Nitride Nanotubes Immersed in Simulated Body Fluid*", TMS Annual Meeting & Exhibition, San Diego, California, 27 Feb. – 3 Mar., 2011.
29. **D. Lahiri**, A.P. Benaduce, L. Kos, A. Agarwal, "*Quantification of Osteoblast Adhesion Strength on Hydroxyapatite-Carbon Nanotube Coated Bioimplant Surfaces*", TMS Annual Meeting & Exhibition, San Diego, California, 27 Feb. – 3 Mar., 2011.
28. I. Lahiri, **D. Lahiri**, S. Jin, A. Agarwal, W.B. Choi, "*Carbon Nanotubes: How strong is their bond with the substrate?*" TMS Annual Meeting & Exhibition, San Diego, California, 27 Feb. – 3 Mar., 2011.
27. A. Gupta, **D. Lahiri**, S. Ghosh, G. Tripathi, B. Basu, A. Agarwal, K. Balani, "*Micro Tribology of Compression Molded Ultrahigh Molecular Weight Polyethylene Reinforced with Aluminum Oxide, Hydroxyapatite and Carbon Nanotubes*", TMS Annual Meeting & Exhibition, San Diego, California, 27 Feb. – 3 Mar., 2011.
26. T. Laha, L. Reddy, A. Keshri, **D. Lahiri**, A. Maiti, "*Synthesis of MWCNT Reinforced Al Based Nanocomposite Via Spark Plasma Sintering*", TMS Annual Meeting & Exhibition, San Diego, California, 27 Feb. – 3 Mar., 2011.
25. A. P. Benaduce, **D. Lahiri**, A. Agarwal, L. Kos, "*Melanocytes and melanoma cells present different mechanical properties that can be modulated by Endothelin 3*", XX1st International Pigment Cell Conference (IPCC) "Skin and Other Pigment Cells: Bridging Clinical Medicine and Science", Bordeaux, France, 20-24 September, 2011.
24. **D. Lahiri**, F. Rouzaud, A. Keshri, L. Kos, A. Agarwal, "*Biocompatibility of Hydroxyapatite-Carbon Nanotube Composite for Orthopedic Implants with Improved Mechanical Properties*", Second Annual Retreat of the Biomedical Nanoscience (BioNIUM), Miami, Florida, 9 - 10 Dec., 2010.
23. A.P Benaduce, **D. Lahiri**, L. Kos, A. Agarwal, "*Nanoindentation reveals differences in the mechanical properties of melanocytes and melanoma cells*", ASCB 50th Annual Meeting, Philadelphia, Pennsylvania, 11 - 15 Dec., 2010.
22. **D. Lahiri**, A. P. Benaduce, L. Kos, A. Agarwal, "*Boron Nitride Nanotube: A Novel Reinforcement for Hydroxyapatite*", Materials Science & Technology 2010 Conference and Exhibition, Houston, Texas, 17-21 Oct. 2010.
21. **D. Lahiri**, A.K. Keshri, A. Agarwal, "*Quantifying Mechanical Properties and Adhesion Strength of a Single Splat – Building Blocks of Thermal Sprayed Coatings*", Materials Science & Technology 2010 Conference and Exhibition, Houston, Texas, 17-21 Oct. 2010.
20. A.K. Keshri, **D. Lahiri**, A. Agarwal, "*Nanoindentation and Nano-scratch Approach to Determine the Mechanical Properties of Plasma Sprayed Al<sub>2</sub>O<sub>3</sub>-CNT Splat*", Materials Science & Technology 2010 Conference and Exhibition, Houston, Texas, 17-21 Oct. 2010.
19. **D. Lahiri**, A.P. Benaduce, S. Facca, L. Kos, N. Jessel, A. Agarwal, "*Mechanical Properties and Biocompatibility in-vitro and in-vivo of Plasma Sprayed Carbon Nanotube Reinforced Hydroxyapatite Coatings for Orthopedic Implants*", 1<sup>st</sup> TMS-ABM International Materials Congress, Rio de Janeiro, Brazil, 26-30 Jul. 2010.
18. H. Couvy, J. Chen, **D. Lahiri**, A. Agarwal, G. Sen, "*Nanohardness and Young's Modulus of nanopolycrystalline diamond*", 2010 Annual Meeting of COMPRES, Stevenson, Washington, 22-25 June, 2010.
17. **D. Lahiri**, A.P. Benaduce, F. Rouzaud, J. Solomon, A. Keshri, L. Kos, A. Agarwal, "*Investigation on Wear Resistance of Plasma Sprayed Hydroxyapatite-Carbon Nanotube Composite Coating on Orthopedic Implant*"

- and Cytotoxicity of Wear Debris", International Conference and Exposition on Advanced Ceramics and Composites -2010, Daytona, Florida, 24-29 Jan.2010.
16. **D. Lahiri**, F. Rouzaud, S. Namin, T. Richard, A. Keshri, S.R. Bakshi, N. Tsoukias, L. Kos, A. Agarwal, "*Poly Lactide-Caprolactone Copolymer-Boron Nitride Nanotube: A Novel Polymer Composite for Biodegradable Scaffold Application*", The International Conference on the Mechanics of Biomaterials and Tissues -2009, Clearwater, Florida, 13-17 Dec.2009.
  15. **D. Lahiri**, F. Rouzaud, A. Keshri, L. Kos, A. Agarwal, "*Biocompatibility of Hydroxyapatite-Carbon Nanotube Composite for Orthopedic Implants with Improved Mechanical Properties*", The International Conference on the Mechanics of Biomaterials and Tissues -2009, Clearwater, Florida, 13-17 Dec.2009.
  14. K. Balani, A.K. Keshri, **D. Lahiri**, S.R. Bakshi, J.E. Tercero, A. Agarwal, "*Nanotribology of Plasma Sprayed Hydroxyapatite Reinforced with Aluminum Oxide and Carbon Nanotubes*", International Conference on Advanced Nanomaterials and Nanotechnology, Indian Institute of Technology Guwahati, India 9-11 Dec. 2009.
  13. K. Balani, R. G. Batista, **D. Lahiri**, A. Agarwal, "*Non-wetting of Lotus Leaf*", National Metallurgist's Day, Indian Institute of Metals Kolkata, Kolkata, India, 14 Nov. 2009.
  12. K. Balani, J. Tercero, S. Kalmodia, S. Namin, **D. Lahiri**, T. Laha, N. Tsoukias, B. Basu, A. Agarwal, E. Lavernia, "*Cytocompatibility of Hydroxyapatite Reinforces with Aluminium Oxide and Carbon Nanotubes*", The Fourth Asian Particle Technology Symposium (APT 2009), New Delhi, India, 14-16 Sept. 2009 (Invited).
  11. F. Rouzaud, **D. Lahiri**, A. Agarwal, L. Kos, "*Study of Melanocytes Mechanical Properties by Nano-indentation Uncover Membrane Plasticity Behavior*", Meeting of PanAmerican Society of Pigment Cell Research-2009,, Memphis, Tennessee, 4-7 Sep.2009.
  10. **D. Lahiri**, S. Namin, T. Richard, A. Keshri, S. Bakshi, N. Tsoukias, A. Agarwal, "*Copolymer-Boron Nitride Nanotube Composite for Biodegradable Scaffold application*", Southern Biomedical Engineering Conference-2009, Miami, 15-17 May.2009.
  9. S. Kalmodia, **D. Lahiri**, A. Agarwal, B. Basu, K. Balani, "*Superior Wear Resistance of Biocompatible UHMWPE Reinforced with Hydroxyapatite and CNTs*", Southern Biomedical Engineering Conference-2009, Miami, 15 -14 May.2009.
  8. **D. Lahiri**, A. Agarwal, "*Dual Strengthening Mechanism Induced by Carbon Nanotube in Roll Bonded Aluminum Composites*", TMS Annual Meeting-2009, San Francisco, 14 – 18 Feb.2009.
  7. S. R. Bakshi, **D. Lahiri**, A. Agarwal, "*Nanotribological Properties of Carbon Nanotube Reinforced Plasma Sprayed Aluminum-Silicon alloy Composite Coatings*", 2009 TMS Annual Meeting and Exposition, San Francisco, California, 15-19 Feb, 2009.
  6. S.V.R. Rao, **D. Lahiri**, M. Anuradha, J.V. Rajkumar, P. Balakrishna, R.K. Srivastava, "*Investigation on the Effect of Heating Rate on Sintering of Uranium Dioxide*", PM2006, India, Jan.2006
  5. K. Kapoor, S.V.R. Rao, **D. Lahiri**, T. Sanyal, "*Characterization of Microstructure, Texture and Residual Stress of Fuel Clad Material using X-Ray Diffraction*", **Advanced X-ray techniques in research and industry**, Ed. A.K. Singh, Capital Pub. Co., India, 2006.
  4. **D. Lahiri**, S.V.R. Rao, R.K. Srivastava, "*Measurement of Surface Residual Stress in Textured Materials*", Stress tech Conf. on measurement of residual stress, Mumbai, Sept, 2005.
  3. **D. Lahiri**, K. Kapoor, S.V.R. Rao, T. Sanyal, "*X-ray Measurement of Near Surface Residual Stress in Textured Cold-Worked Stress Relieved Zirconium Alloy Component for Nuclear Applications*", ZIRC'2002, BARC, India.
  2. K. Kapoor, **D. Lahiri**, S.V.R. Rao, T. Sanyal, "*Effect of Hot and Cold Deformation on Texture Evolution in Two Phase Zr-2.5wt%Nb Pressure Tubes for PHWR*", ZIRC'2002, BARC, India.
  1. K. Kapoor, **D. Lahiri**, S.V.R. Rao, T. Sanyal, "*Influence of Crystallographic Texture on X-ray Residual Stress Measurement for Ti-3Al-2V Tube Material*", IIM –ATM, 2001

## **AWARDS & ACHEIVEMENTS**

1. Best paper award (third) in IIM-ATM (Indian Institute of Metals - Annual Technical Meeting)-2015.
2. Receptient of Zwick Science Award – 2013. (<http://www.zwick.co.in/en/news/news-detail/article/zwick-science-award-foerderung-der-wissenschaft.html>)
3. Invited by Provost, FIU to present the research work in Board of Trustees meeting – as recognition to excellent research achievements at FIU – 17 August, 2011.
4. Selected by President, FIU as 'World's Ahead FIU Graduate' for the class of Summer-2011 – recognized in person during Commencement on 13 August, 2011 ([http://commencement.fiu.edu/worldsaheadgraduates\\_Form.php](http://commencement.fiu.edu/worldsaheadgraduates_Form.php))
5. Recognized as best Doctoral Graduate for Summer-2011 in College of Engineering and Computing, FIU.
6. Recognized for outstanding performance as Doctoral Graduate by Department of Mechanical and Materials Engineering, FIU in Summer-2011.
7. Research works have been highlighted as news (twice) in 'Nanowerk' and 'Nanotech Web' - popular Nanotechnology websites  
<http://nanotechweb.org/cws/article/lab/46915>  
<http://www.nanowerk.com/spotlight/spotid=19707.php>
8. Recognized by University Graduate School, FIU as "Student Spotlight" – for excellent academic achievements ([http://gradschool.fiu.edu/student\\_spotlight.html](http://gradschool.fiu.edu/student_spotlight.html))
9. Second best oral presentation award for symposium on "Surfaces and Heterostructures at Nano- or Micro-Scale and Their Characterization, Properties, and Applications" in TMS-2011, San Diego, USA.
10. First place in student poster competition, MS&T-2010, Houston, USA (<http://ceramics.org/acers-blog/and-the-winners-are>) - American Ceramic Society Bulletin, 2011, Vol. 90, No. 1.
11. First place in student poster competition – Materials Processing and Manufacturing Division, TMS-2009, San Francisco, USA (<http://materialstechnology.tms.org/edu/article.aspx?articleID=2475>).
12. Recipient of Dissertation Year Fellowship (DYF) by University Graduate School, FIU for Spring-Summer, 2011.
13. Recipient of Dissertation Evidence Acquisition (DEA) Fellowship by University Graduate School, FIU for 2009-2010.
14. Several Travel Awards from
  - Biological Materials Science Division, TMS to attend TMS-2011 conference.
  - Graduate Student Association, FIU – 4 times
15. Selected and served as student delegate to PCSA - President's Council of Student Advisors, American Ceramic Society for 2009-2010 (selected from several material science student applicants, from universities over USA).
16. Several awards in technical competitions in FIU
  - Second place, Scholarly Forum for technical poster presentation, Graduate Student Association, FIU, Spring-2011.
  - Second place, technical poster competition, Material Advantage, FIU Chapter, Spring-2011.
  - Second place, technical oral presentation competition, Material Advantage, FIU Chapter, Fall-2011.
  - Second place, 'Art inside Materials' contest, Material Advantage, FIU Chapter, Spring-2011.
  - First place, technical poster competition, Material advantage, FIU chapter, Spring-2010.
  - Second place, 'Art inside Materials' contest, Material Advantage, FIU Chapter, Spring-2010.



- Second place, Scholarly Forum for technical presentation, Graduate Student Association, FIU, Spring-2010.
  - First place, technical oral presentation competition, Material Advantage, FIU Chapter, Fall-2009.
  - First place, 'Art inside Materials' contest, Material Advantage, FIU Chapter, Spring-2009.
17. Best member award by Materials Advantage, FIU Chapter for 2010-2011, 2009-10 and 2008-09.
  18. Outstanding Member Award for Materials Advantage, Council of Student Organizations, FIU, 2008-2009 (among more than 175 student clubs).
  19. Best paper award in IIM-ATM (Indian Institute of Metals - Annual Technical Meeting)-2001.
  20. Ranked 1<sup>st</sup> in M.Tech, MME Dept., IIT Kanpur, India.
  21. Ranked 3<sup>rd</sup> in B.E., Metallurgy Dept., B.E. College, Shibpur, India.
  22. Nominated for membership of Sigma Xi Honors Society by Department of Mechanical and Materials Engineering, FIU and sponsored for the same.

### **TEACHING EXPERIENCE**

1. MT 542 – Biomaterials (Electives for Undergraduates and Graduates)
2. MT 501 – Structure of Materials (Graduate course)
3. MT 411 – Nanomaterials and Application – (undergraduate course)..
4. MT 201B / MT 106 – Material Science (undergraduate course).
5. NT 501 – Nanoscale Materials (graduate course).
6. NT 502 – Structural Analysis of Nanomaterials (graduate course).
7. MT 308 – Communications Skills (undergraduate course).
8. EGN 3365 – Materials Engineering (undergraduate course) as sole instructor in Fall, 2012 (FIU).
9. Nanoindentation and X-ray Diffraction for EMA 5507C - Analytical Techniques in Materials Science (graduate course) – (FIU).

### **SUPERVISING PHD THESIS FOR**

- Mr. Manoj Kumar R – Topic: Drug Releasing Orthopedic Implant
- Mr. Vijayesh Kumar – Topic: Synthesis of BNNT and its Application in Composites
- Ms. Pallavi Gupta – Topic: Functionalized Scaffold for Nerve Tissue Engineering
- Ms. Ankita Bisht – Topic: Nanophase Reinforced Polymer Based Composite for Aerospace Application
- Ms. Anshu Dubry – Topic: Functionally Graded Mg-HA composite for Orthopaedic Application
- Mr. Satish Jaiswal – Topic: Mg Based Scaffold for Orthopedic Application
- Mr. K.B. Bisal – Topic: Surface Modified Metallic Orthopedic Implant for Sustained Drug Release
- Mr. Vaibhav Jain – Topic: Multiscale Carbon Filler Reinforced Epoxy Composites for Structural Application

### **ADVISING M. TECH CANDIDATES**

- **Graduation in Summer 2014:**

Pramanshu Trivedi: Mg Based Implant for Orthopedic Application

Sameer Couksey: Carbon Nanotube Based Composites for Li-ion Battery Application

- **Graduation in Summer 2015:**

Sanjay Singh: Surface Modification of Magnesium Based Alloy for Orthopedic Application

Kishor Kumar Kuntal: Corrosion Behavior of Surface Modified Mg-Zn Alloy for Orthopedic Application

Soumyaranjan Nayak: Modification of Mechanical Behavior of Mg-Zn Alloy for Hard Tissue Engineering

- **Graduation in Summer 2016:**

Satish Jaiswal: Mg Based Material System for Orthopedic Application

Mukul Srivastava: Graphene Reinforced Composite for Structural Application

- **Graduation in Summer 2017:**

Akriti Sharma: Scaffolds for Deep Wound Healing

Bhagyadhar Das: Synthesis and Characterization of Spark Plasma Sintered  $\text{Al}_2\text{O}_3$ - $\text{ZrO}_2$ -CNT Composites

Ketan Khamgaonkar: Polymer Based Composite for Structural Application

Subham Aggarwal: Hot Working of Mg Alloys

### **FUNDED RESEARCH**

1. Polymer Based Orthopedic Implant (PI) – SRIC-IITR – 10 lakhs – 2013-2016
2. Developing Polymer Based Surface Modified Composite for Drug Eluting Orthopedic Implants (PI) – DST, SERB – 24.67 lakhs – 2014-2017
3. Magnesium Based Functionally Gradient Material System for Orthopedic Application (PI) – DST, SERB – 53.91 lakhs – 2015-2018
4. Surface Modified Metallic Orthopedic Implant for Sustained Drug Release (PI) – DST, TSDP – 92.49 lakhs - 2016-2019
5. Development of Hybrid Multiscale Carbon Filler Reinforced Epoxy Composites for Structural Application (PI) – BRNS, DAE – 35.42 Lakhs – 2016-2019
6. Developing Polymer Based Scaffold with Electrical and Topographical Cue for Neural Tissue Engineering (PI) – ICMR – 52.69 lakhs – 2017-2020

### **OTHER PROFESSIONAL ACTIVITIES**

1. Reviewer for –

- ACS Applied Materials and Interfaces
- Acta Biomaterialia
- Advances in Tribology
- Carbon
- Ceramics International
- Crystal Growth and Design
- Current Applied Physics

- Journal of Alloys and Compounds
  - Journal of Crystal Growth and Design
  - Journal of Materials Engineering and Performances
  - Journal of Thermal Spray Technology
  - JOM
  - Materials Chemistry and Physics
  - Materials Express
  - Materials Science and Engineering A
  - Metallurgical and Materials Transaction A (received letter of appreciation from the Editor for excellent review)
  - Acientific Reports
  - Surface and Coatings Technology
  - Surface Engineering
  - Wear
  - And several others
2. Reviewer for funding agencies from Dept. of Science & Technology and Dept. of Biotechnology, India.
  3. Faculty Advisor METES (Metallurgical Engineering Society) at IITR.
  4. Visited University of Southampton, UK in summer, 2014 as a part of IIT-Roorkee team.
  5. Visited University of Strasbourg, France for one week in February, 2010 as visiting researcher to have exposure on animal studies for bio-implants.
  6. Served as in-charge of X-ray Residual Stress Measurement facility and Dialatometry facility in Advanced materials Characterization lab, Nuclear Fuel Complex, Hyderabad, India.
  7. Invited speaker and a part of DST, India Delegate in INDOGFOE-2016 – a bilateral symposium between DST, India and Humboldt Foudation Germany, at Potsdam, Germany.
  8. Invited talk at CSIR-CGCRI, Kolkata on “Hydroxyapatite Modified Mg Alloy for Orthopedic Application” – 30 December, 2015.

#### **CONTRIBUTIONS TO CONTINUING EDUCATION PROGRAMMES**

- (i) Offered free tutorship in ‘Materials Engineering’ course – to undergraduate students in spring-2010, on behalf of Material Advantage, FIU – for better understanding of the subject for students in one to one close supervision.
- (ii) Offered seminar on Nanotechnology and its impact on community to high school students at “Coral Park Senior High School” several times during 2009-2010 with interesting demonstration. Received ‘letter of appreciation’ from Office of Intergovernmental Affairs and Community Engagement, Miami-Dade County, Florida, USA – for community service through outreach activities.

#### **AFFILIATION TO PROFESSIONAL SOCIETIES**

1. American Ceramic Society (ACerS)

2. The Minerals, Metals & Materials Society (TMS)
3. Materials Research Society India (MRSI) –Life Member
4. Indian Institute of Metals (IIM) – Life Member
5. Society for Tissue Engineering and Regenerative Medicine (India) – Life Member
6. Society for Biomaterials and Artificial Organs India – Life Member

**As on 25 May, 2017**