Curriculum Vitae

1. **Name** : **Dr. Manas Chandra Ray**

2. **Position** : **Professor (HAG)**

3. **Affiliation** : **Department of Mechanical Engineering**
Indian Institute of Technology,
Kharagpur – 721302, India

4. **Educations** :

Post Doctoral Research as a Visiting Faculty in **Virginia Polytechnic Institute and State University, Blacksburg, USA** during June 25, 2018- July 24, 2018.

Post Doctoral Research as a Visiting Faculty in **Rensselaer Polytechnic Institute, Troy, New York, USA,** during May 18, 2017- July 17, 2017.

Post Doctoral Research as a Visiting Faculty in **Texas Tech University, Lubbock, Texas, USA** during May 18, 2016- July 17, 2016.

Post Doctoral Research as a Visiting Faculty in **University of California, Irvine, California, USA** during May 18, 2015- July 17, 2015.

Post Doctoral Research as a Visiting Faculty in **Virginia Polytechnic Institute and State University, Blacksburg, USA** during May 16, 2014- July 15, 2014.

Post Doctoral Research as a Visiting Professor in **University of maryland** at College Park, **Maryland**, **USA** during May 16, 2013- July 15, 2013.

Post Doctoral Research as a Visiting Scholar in **Texas A&M University** at College Station, **Texas**, **USA** during May 20, 2012- July 18, 2012.

Post Doctoral Research as a Visiting Scholar in **Virginia Polytechnic Institute and State University, Blacksburg, USA** during May 18, 2010- July 15, 2010.

Post Doctoral Research as a Visiting Scholar in **Virginia Polytechnic Institute and State University, Blacksburg, USA** during May 18, 2009- July 15, 2009.

Post Doctoral Research as a Visiting Faculty in the **Department of Aeronautics and Astronautics at MIT, Cambridge, USA** June, 2008.

Post Doctoral Research as a Visiting Scholar in **Virginia Polytechnic Institute and State University, Blacksburg, USA** during May 20, 2007- July 18, 2007.

Post Doctoral Research as a Visiting Scholar in **Virginia Polytechnic Institute and State University, Blacksburg, USA** during May 20, 2006- July 18, 2006.

Post Doctoral Research as a Visiting Scholar in **Texas A&M University** at College Station, **Texas**, **USA** during May 20, 2002- July 20, 2002.

Post Doctoral Research, **University of Maryland at College Park**, **USA** during May 18, 1999 -October 30, 2000)

Post Doctoral Research, **The Catholic University of America**, **Washington**, **DC** (November 20, 1995 - May 24, 1997)

Ph. D. in Mechanical Engineering, Indian Institute of Technology, Kharagpur, January 1995

M.Tech in Machine Dynamics, Indian Institute of Technology, Kharagpur, January 1988

B.M.E. (Bachelor in Mechanical Engineering), Jadavpur University, Calcutta, India, 1986

5. **Research Interests**:

- Smart Mechanical Structures, Composite structures, Fuzzy fiber reinforced composites
- Flexoelectricity, Flexomagnetism, Strain Gradient Elasticity
- Carbon Nanotube Reinforced Piezoelectric Composites
- Piezoelectric Fiber-Reinforced Composites
- Active Constrained Layer Damping, Active Structural-Acoustic Control
- Micromechanics and Mechanics of Smart Composite Materials
- Fractional order derivative model of viscoelastic material
- Vibration and Control, Finite Element Method

6. **Honors and Award**

- **Fellow of the Indian National Academy of Engineering (FNAE) since 2010**
- **Featured in the list of top 2% global scientists published in PLOS Biology by Stanford University in 2020. According to this ranking system, his worldwide rank in Mechanical Engineering is 396 among 92645 top 2% researchers which is within top 0.4274% and the rank in the department is 1**
- Visiting Professor (Nontenured teaching faculty), **Rowan University**, **a State University of New Jersey**, September 2019- June 2020
- Visiting Professor, **University of Maryland**, May – July, 2013
- Visiting Associate Professor (Nontenured teaching Faculty), **Texas A&M University**, September 2003- May 2004
- Visiting Assistant Professor, **University of Maryland**, May 1999 – October 2000
- Post Doctoral Fellowship in **University of Maryland**, 1999-2000.
- Elected member of "The Honor Society of Phi Kappa Phi", **Texas A&M University**, 2004
- Have been selected for the 23rd Edition of **Who's Who in The World**, **2006**

7. **Distinguished Collaborators**

- **Professor S. N. Atluri, Fellow of the NAE (USA), Padma Bhushan**
  Mechanical Engineering Department, University of California, Irvine, California, USA
- **Professor J. N. Reddy, Fellow of the NAE (USA)**
  Mechanical Engineering Department, Texas A & M University, College Station, USA
- **Professor Brian Wardle**
  Department of Aeronautics and Astronautics,
  Massachusetts Institute of Technology, Cambridge, USA
- **Professor A. Baz**
  Mechanical Engineering Department
  University of Maryland, College Park, Maryland, USA
- **Professor R. C. Batra**
  Distinguished Professor
  Virginia Tech, Blackaburg, Virginia, USA

8. **Supervisions** :

Ph.D. **:** Number completed – 12 (as sole supervisor)
: Number completed – 1 (as joint but main supervisor)
: Number in progress –2 (as sole supervisor)

M.Tech. : Number completed > 100; Number in progress –5;

M.S. **:** Number completed – 1;

A Ph.D. student, Dr. Shailesh I. Kundalwal, guided by me for his Ph.D. Degree, worked on micro and nanomechanics of fuzzy fiber-reinforced composite a novel area of research and won the most prestigious international Post Doctoral Fellowship known as the "**Banting Fellowship**" funded by the Canadian National Research Council. Dr. Kundalwal is the first Banting Fellow of University of Toronto.

9. **Industrial Experience on Commercial Design and Manufacturing**

Acquired four and half years (March, 1988 - September, 1990 and October, 1993 - October, 1995) of industrial experience in **M/S Jessop & Co. Ltd**., Calcutta. The nature of job involved design and manufacture of **EOT Cranes for Steel Plants**, **Level Luffing Cranes for Sea Ports**, **Electro-hydraulic breakdown Cranes** for Railways, **Motor Grader** for Open Cast mines and **Powered roof supports** for mechanized mines.

Manufactured and commissioned a **Motor Grader** taking sole responsibility as a Class I Engineer at Godabari Mine, AP in 1989.

Developed a prototype model of hydraulic **Powered roof support** for underground mechanized mines in collaboration with **Gullick Dobson Ltd., UK**.

Designed long travel mechanism of 440 Te **laddle Crane** for Bokaro Steel Plant modernization in 1995 which is one of the 7 largest Cranes in the world during the period from the date of submission of the Ph.D. thesis to the start of the Post doctoral research in USA in November, 1995. The crane is in operation in Bokaro Steel Plant.

10. **Journals where contributed:**

- ASME Journal of Applied Mechanics
- ASME Journal of Vibrations and Acoustics
- ASME Journal of Heat Transfer
- ASME Journal of Dynamic Systems, Measurement, and Control
- ASCE Journal of Nanomechanics and Micromechanics
- **AIAA** Journal
- Smart Materials and Structures
- International Journal for Numerical Methods in Engineering
- International Journal of Mechanics and Materials in Design
- IEEE Transaction on Ultrasonics, Ferroelectrics and Frequency Control
- International Journal of Solids and Structures
- International Journal of Thermal Sciences
- International Journal of Heat and Mass Transfer
- Journal of Mechanics of Materials and Structures
- Composites Science and Technology
- Composite Structures
- Composites Part B
- Acta Mechanica
- Wave Motion
- International Journal of Mechanical Sciences
- Mechanics of Advanced Materials and Structures
- Journal of Applied Physics
- Journal of Sound and Vibration
- Journal of Vibration and Control
- Computers and Structures
- Finite Elements in Analysis and Design
- Journal Reinforced Plastics and Composites
- Thin walled structures
- Journal of Advanced Materials
- European Journal of Mechanics A/Solids
- Mechanics of Materials
- World Academy of Science, Engineering and Technology
- International Journal of Structural Stability and Dynamics
- Journal of Composites
- Mechanical Systems and Signal Processing
- Journal of Intelligent Material Systems and Structures
- Quarterly Journal of Mechanics and Applied Mathematics
- Mathematics and Mechanics of Solids

- Polymer Composites

11. **Publications**:

International Journals: Number completed – 136, Number under review – 5
Total Citations: 4675 (as per google scholar), **h**-index: 40

12. **Chapters contributed to books:**

i. **M. C. Ray**, 2016, "Smart Fuzzy Fiber-Reinforced Piezoelectric Composites", Advances in Nanocomposites, Modeling, Characterization and Applications, Chapter 5, Springer.

ii. **M. C. Ray** and S. I. Kundalwal, 2016, "Effective Elastic Properties of a Novel Continuous Fuzzy Fiber-Reinforced Composite with Wavy Carbon Nanotubes", Graphene Science Handbook, Chapter 2, Taylor & Francis Group.

13. **Sponsored research projects**

i. **PI** of the project "Active structural acoustic control of smart structures using 1-3 piezoelectric composite material", funded by DST, Government of India, Cost of project: Rs. 1640000, status: completed.

ii. **Co-PI** of the project "**Composite Applications Laboratory**", funded by **TIFAC**, **DST**. The cost of project is Rs. 35 million, status: completed.

iii. **Co-PI** of the project "Design, development and performance study of a "new concept harmonic drive", financed by DST, Government of India; Amount Rs. 1014000. Completed.

14. **Invited Lectures Delivered**

Presented a talk on "**Micromechanical Analysis of Novel Fuzzy Fiber-Reinforced Advanced and Smart Composites**" at the Advanced Functional Materials Conference, University of Stony Brook, Stony Brook, New York, during June 29 – July 03, 2015.

Invited talk: "**Concept of novel fuzzy feber reinforced advanced and smart composites**" at ISAMPE National Conference on Composites held in ISRO, Thiruvananthapuram, November 14-15, 2014.

Presented a paper on the "**Active damping of nonlinear vibrations of doubly curved composite shells using Active fiber and 1-3 piezoelectric composites**" at the sixth M.I.T. Conference on Computational fluid and Solid Mechanics, Massachusetts Institute of Technology, Cambridge, MA, USA, during June 15-17, 2011.

Presented a paper on the "**Analysis of smart hybrid composite reinforced with carbon nanotubes coated piezoelectric fibers**" at the 2009 Joint ASCE-ASME-SES Conference on Mechanics and Materials, during June 24-27, 2009, Virginia Tech., Blacksburg, USA.

Delivered an invited lecture on "**Multiscale analysis of fuzzy piezoelectric fiber reinforced composite"** at ISTAM, Hyderabad, India, 2008.

Delivered an invited lecture on "**Smart Structures**" at BHEL R&D, Hyderabad on

September 8, 2006.

Delivered two Lectures on "**Optimal control of smart cylindrical shells**" and "**Effect of delamination on active constrained layer damping**" in the Department of Mechanical Engineering at **Texas A&M University, College Station, USA** in July 2002**.**

Presented a paper on the "**Analysis of piezoelectric fiber reinforced composites as a new smart material for active control of flexible structures**" in the SPIE's International Symposium on Smart Materials, Nano- and Micro- Smart Systems, held at **RMIT**, **Melbourne, Australia** during December 16-18, 2002.

Presented a paper on **"Control of Non-linear Vibration of Beams Using Active Constrained Layer Damping"** in the 8th International Conference on Non-linear Vibration, **VPI & SU –Blacksburg**, VA, USA, July 23-27, 2000.

15. **Membership**

Life member, ISTAM

16. **Any other information**

i. Editorial Board Member: **Smart Materials Research**

ii. Editorial Board Member: **The International Journal of Mechanics and Materials in Design** published by Springer from March 2015.

iii. Associate Editor: **Structural Durability and Health Monitoring** (2015-2020).

List of Publications in International Journals only

Sole Authored publications

1. **M. C. Ray**, 2021, "Three-dimensional exact elasticity solutions for antisymmetric angle-ply laminated composite plates", ***International Journal of Mechanics and Materials in Design***, DOI: 10.1007/s10999-021-09536-y.
2. **M. C. Ray**, 2019, "A novel smart hybrid-Trefftz finite element for smart laminated composite plates" ***International Journal of Numerical Methods in Engineering***, https://doi.org/10.1002/nme.6153.
3. **M. C. Ray**, 2018, "A novel hybrid-Trefftz finite element for symmetric laminated composite plates", ***International Journal of Mechanics and Materials in Design***, https://doi.org/10.1007/s10999-018-9422-9.

4. **M. C. Ray**, "Mesh Free Models for Static Analysis of Smart Laminated Composite Beams", 2017, ***International Journal of Numerical Methods in Engineering,*** Vol. 109, No. 13, pp. 1804-1820.

5. **M. C. Ray**, 2017, "Enhanced Magnetoelectric Effect in Multiferroic Composite Beams Due to Flexoelectricity and Transverse Deformations", ***International Journal of Mechanics and Materials in Design***, DOI 10.1007/s10999-017-9380-7.

6. **M. C. Ray**, "Mesh Free Model of Nanobeam integrated with a Flexoelectric Actuator Layer", 2017, ***Composite Structures***, 159, 63-71.

7. **M. C. Ray**, "Analysis of Smart Nano Beams Integrated with a Flexoelectric Nano Actuator Layer", 2016, ***Smart Materials and Structures, Vol.*** 25 (5), pp. 055011.

8. **M. C. Ray**, "Exact solutions for flexoelectric response in nanostructures", ***ASME Journal of Applied Mechanics***, 2014, Vol. 81, art no. 091002.

9. **M. C. Ray,** "Concept of a novel hybrid smart composite reinforced with radially aligned zigzag carbon nanotubes on piezoelectric fibers", ***Smart Materials and Structures,*** 2010, Vol. 19, art no. 035008**.**

10. **M. C. Ray**, "A Shear lag model of piezoelectric composite reinforced with carbon nanotubes-coated piezoelectric fibers", ***International Journal of Mechanics and Materials in Design,*** 2010, vol. 6, pp.147-155.

11. **M. C. Ray**, "Smart damping of thin cylindrical panels using piezoelectric fiber reinforced composites", ***International Journal of Solids and Structures,*** 2007, vol. 44, pp.587-602.

12. **M. C. Ray, "**Micromechanical analysis of Piezoelectric fiber reinforced composites with improved effective piezoelectric constant**",** ***International Journal of Mechanics and Materials in Design,*** 2007, Vol. 3, pp. 361-371.

13. **M. C. Ray**, **"**Hybrid damping of Smart functionally graded plate using piezoelectric fiber reinforced composites**",** ***IEEE Transaction on Ultrasonics, Ferroelectrics and Frequency Control,*** 2006, Vol. 53, No. 11, pp. 2152-2165.

14. **M. C. Ray**, **"**Optimal Control of Laminated Shells Using Piezoelectric Sensor and Actuator Layers**",** ***AIAA Journal,*** 2003, Vol. 41, No. 6, pp. 1151-1157.

15. **M. C. Ray**, **"**Zeroth Order Shear Deformation Theory for Laminated Composite Plates**",** ***ASME Journal of Applied Mechanics,*** 2003, Vol. 70, No. 3, pp. 374-380.

16. **M. C. Ray**, **"**Optimal Control of Laminated Plate with Piezoelectric Sensor and Actuator Layers"***, AIAA Journal,*** 1998, Vol. 36, No. 12, pp. 2204-2208.

17. **M. C. Ray**, **"**Closed Form Solution for Optimal Control of Laminated Plate**",** ***Computers & Structures,*** 1998, Vol. 69, No. 2, pp. 283-290.

Publications with one Co-author

18. **M. C. Ray** and S Dwibedi, 2020, "Hybrid-Trefftz finite element model for antisymmetric laminated composite plates using a high order shear deformation theory", ***International Journal of Mechanics and Materials in Design***, https://doi.org/10.1007/s10999-020-09496-9.
19. S. Sahoo and **M. C. Ray**, 2019, "Active damping of geometrically nonlinear vibrations of smart composite plates using elliptical SCLD treatment with fractional derivative viscoelastic layer", ***European Journal of Mechanics - A/Solids***, Vol. 78, pp. 103823, https://doi.org/ 10.1016/j.euromechsol.2019.103823.
20. Sai Sidhardh and **M. C. Ray**, 2019, "Size-dependent Eshelby ellipsoidal inclusion problem based on generalized first strain gradient elasticity theory", ***Mathematics and Mechanics of Solids,*** doi.org/10.1177/1081286518820901.
21. Sai Sidhardh and **M. C. Ray**, 2019, "Dispersion curves for Rayleigh-lamb waves in a micro-plate considering strain gradient elasticity", ***Wave Motion***, Vol. 86, pp. 91-109.
22. Sai Sidhardh and **M. C. Ray**, 2019, "Size dependent elastic response in functionally graded microbeams considering generalized first strain gradient elasticity", ***Quarterly Journal of Mechanics and Applied Mathematics***, Vol. 72, pp. 273-304.
23. S. Sahoo and **M. C. Ray**, 2019, "Active Control of Nonlinear Transient Vibration of Laminated Composite Beams using Triangular SCLD Treatment and Fractional Order Derivative Viscoelstic Model", ***ASME Journal of Dynamic Systems, Measurement and Control***, Vol. 141, pp. 111014.
24. S. Sahoo and **M. C. Ray**, 2019, "Active Control of Doubly Curved Laminated Composite Shells Using Elliptical Smart Constrained Layer Damping Treatment", ***Thin Walled Structures***, Vol. 140, pp. 373-386.
25. S. Sahoo and **M. C. Ray**, 2019, "Active control of laminated composite plates using elliptical smart constrained layer damping treatment", ***Composite Structures***, Vol. 211, pp. 376-389.
26. Priyankar Datta and **M. C. Ray**, 2019, "Effect of Carbon Nanotube Waviness on Smart Damping of Geometrically Nonlinear Vibrations of Fuzzy-Fiber Reinforced Composite Plates", ***Journal of Intelligent Materials Systems and Structures***, doi.org/10.1177/1045389X19828481.
27. B. K. Jha and and **M. C. Ray**, 2018, "Benchmark analysis of piezoelectric bimorph energy harvesters composed of laminated composite beam substrates" ***International Journal of Mechanics and Materials in Design***, doi.org/10.1007/s10999-018-9434-5.
28. Sai Sidhardh and **M. C. Ray**, 2018, "Flexomagnetic response of nanostructures", ***Journal of Applied Physics***, Vol. 124, 244101, doi:10.1063/1.5060672.

29. Sai Sidhardh and **M. C. Ray**, 2018, "Element-free Galerkin model of nano-beams considering strain gradient elasticity", ***Acta Mechanica***, Vol. 229, pp. 2765-2786.
30. Sai Sidhardh and **M. C. Ray**, 2018, "Exact solutions for elastic response in micro and nano beams considering strain gradient elasticity", ***Mathematics and Mechanics of Solids,*** DOI: 10.1177/1081286518761182.
31. Sai Sidhardh and **M. C. Ray**, 2018, "Exact solutions for flexoelectric response in elastic dielectric nanobeams considering generalized constitutive gradient theories", ***International Journal of Mechanics and Materials in Design***, DOI: 10.1177/s10999-018-9409-6.
32. Sai Sidhardh and **M. C. Ray**, 2018, **"**Effective properties of flexoelectric fiber-reinforced nanocomposite", ***Materials Today Communications***, Vol. 17, pp. 114-123.
33. Sai Sidhardh and **M. C. Ray**, 2018, **"**Inclusion problem for a generalized strain gradient elastic continuum", ***Acta Mechanica***, Vol. 229, pp. 3813-3831.
34. Sai Sidhardh and **M. C. Ray**, 2018, "Exact solutions for static electro-mechanical response of doubly curved smart laminated shells", ***Thin Walled Structures***, Vol. 133, pp. 71-74.
35. Sai Sidhardh and **M. C. Ray**, 2018, **"**Exact solutions for size-dependent elastic response in laminated beams considering generalized first strain gradient elasticity", ***Composite Structures***, Vol. 204, pp. 31-42.
36. S. C. Kattimani and **M. C. Ray**, 2018, "Vibration control of multiferroic fibrous composite plates using active constrained layer damping", ***Mechanical Systems and Signal Processing,*** Vol. 106, pp. 334-354.
37. Priyankar Datta and **M. C. Ray**, 2018, "Smart Damping of Large Amplitude Vibrations of Variable Thickness Laminated Composite Shells", ***Thin Walled Structures***, Vol. 127, pp. 710-727.
38. Sai Sidhardh and **M. C. Ray**, 2017, **"**Effect of nonlocal elasticity on the performance of a flexoelectric layer as a distributed actuator of nanobeams", ***International Journal of Mechanics and Materials in Design***, DOI 10.1007/s10999-017-9375-4.
39. R. S. Kumar and **M. C. Ray,** 2017, **"**Control of Large Amplitude Vibrations of Doubly Curved Sandwich Shells Composed of Fuzzy Fiber Reinforced Composite Facings", ***Journal of Aerospace Science and Technology***, Vol. 70, pp. 10-28.
40. S. Sahoo and **M. C. Ray**, 2017, **"**Analysis of Smart Damping of Laminated Composite Beams Using Mesh Free Method", ***International Journal of Mechanics and Materials in Design***, DOI 10.1007/s10999-017-9379-0.
41. N. Sneha Rupa and **M. C. Ray**, 2017, "Analysis of flexoelectric response in nanobeams using nonlocal theory of elasticity", ***International Journal of Mechanics and Materials in Design,*** DOI 10.1007/s10999-016-9347-0, Vol. 13, pp.453-467.

42. Priyankar Datta and **M. C. Ray**, "Smart Damping of Geometrically Nonlinear Vibrations of Composite Shells Using Fractional Order Derivative Viscoelastic Constitutive Relations", 2016, ***Mechanics of Advanced Materials and Structures,*** http://dx.doi.org/10.1080/15376494.2016.1255811.

43. Priyankar Datta and **M. C. Ray**, "Fractional Order Derivative Model of Viscoelastic layer for Active Damping of Geometrically Nonlinear Vibrations of Smart Composite Plates", 2016, ***CMC***: ***Computers, Materials, & Continua,*** 49 (1), pp. 47-80.

44. R. S. Kumar and **M. C. Ray**, 2016, "Smart damping of geometrically nonlinear vibrations of functionally graded sandwich plates using 1-3 piezoelectric composites", ***Mechanics of Advanced Materials and Structures,*** Vol. 23, No. 6, pp. 652-669.

45. S. Dhala and **M. C. Ray**, "Micromechanics of piezoelectric fuzzy fiber- reinforced composite", ***Mechanics of Materials***, 2015, vol. 1, pp. 1-17.

46. S. C. Kattimani and **M. C. Ray**, "Control of geometrically nonlinear vibrations of functionally graded magneto-electro-elastic plates", ***International Journal of Mechanical Sciences***, 2015,Vol. 99, pp. 154-167.

47. S. I. Kundalwal and **M. C. Ray**, "Effective thermal conductivities of a novel fuzzy fiber reinforced composite containing wavy carbon nanotubes", ***ASME Journal of Heat Transfer***, 2015, Vol. 137, No.1, art. No. 012401.

48. R. M. Kanasogi and **M. C. Ray**, "Performance of Skew or Rectangular Smart Patches for Active Damping of Nonlinear Vibrations of Skew Doubly Curved Laminated Composite Shells", ***International Journal of Mechanics and Materials in Design***, 2015, Vol. 11, No. 2, pp. 173-202.

49. Priyankar Datta and **M. C. Ray**, "Finite element analysis of laminated composite plates using zeroth-order shear deformation theory", ***International Journal of Mechanics and Materials in Design***, 2015, DOI 10.1007/s10999-015-9307-0.

50. Priyankar Datta and **M. C. Ray**, "Three-dimensional Fractional Derivative Model of Smart Constrained Layer Damping Treatment for Composite Plates Composite Structures", ***Composite Structures,*** 2015, http://dx.doi.org/10.1016/ j.compstruct. 2015.10.021.

51. R. S. Kumar and **M. C. Ray**, "Active damping of large amplitude vibrations of sandwich plates composed of fuzzy fiber reinforced composite facings", 2015, ***International of Dynamics and Control***, DOI 10.1007/s.40435-015-0180-3.

52. S. I. Kundalwal and **M. C. Ray**, "Shear lag model for regularly staggered short fuzzy fiber reinforced composite", ***ASME Journal of Applied Mechanics***, 2014, Vol. 81, art no. 091001.

53. S. I. Kundalwal and **M. C. Ray**, "Shear lag analysis of a novel short fuzzy fiber reinforced composite", ***Acta Mechanica***, 2014, DOI 10.1007/s00707-014-1095-3.

54. S. I. Kundalwal and **M. C. Ray**, "Effective thermal conductivities of a novel fuzzy carbon fiber heat exchanger containing wavy carbon nanotubes", ***International Journal of Heat and Mass Transfer***, 2014, Vol. 72, pp. 440-451.

55. S. I. Kundalwal and **M. C. Ray**, "Estimation of thermal conductivities of a novel fuzzy fiber reinforced composite", ***International Journal of Thermal Sciences***, 2014, Vol. 76, pp. 90-100.

56. S. I. Kundalwal and **M. C. Ray**, "Effect of carbon nanotube waviness on the effective thermoelastic properties of a novel continuous fuzzy fiber reinforced composite", ***Composites Part B***, 2014, Vol. 57, pp. 109-209.

57. **M. C. Ray** and S. I. Kundalwal**, "**A thermomechanical shear lag analysis of short fuzzy fiber reinforced composite containing wavy carbon nanotubes**",** ***European Journal of Mechanics - A/Solids***, 2014, Vol. 44, pp. 41-60.

58. S. C. Kattimani and **M. C. Ray**, "Active control of large amplitude vibrations of smart magneto-electro-elastic doubly curved shells", ***International Journal of Mechanics and Materials in Design***, 2014, Vol. 10, No. 4, pp. 351-378.

59. A. Kumar and **M. C. Ray**, "Control of smart rotating laminated composite truncated conical shell", ***International Journal of Mechanical Sciences***, 2014, Vol. 89, pp. 123-141.

60. S. C. Kattimani and **M. C. Ray**, "Smart damping of Geometrically Nonlinear Vibrations of Magneto-Electro-Elastic Plates", ***Composite Structures***, 2014, Vol. 114, pp. 51-63.

61. S. I. Kundalwal and **M. C. Ray**, "Smart damping of fuzzy fiber reinforced composite plates using 1-3 piezoelectric composites", ***Journal of Vibration and Control***, 2014, DOI: 10.1177/1077546314543726.

62. **M. C. Ray** and S. I. Kundalwal**,** "Effect of carbon nanotube waviness on the load transfer characteristics of the short fuzzy fiber reinforced composite," ***ASCE Journal of Nanomechanics and Micromechanics***, 2013, Vol. 4, A4013010. Special Issue: Mechanics of Nanocomposites and Nanostructures.

63. S. I. Kundalwal and **M. C. Ray**, "Thermoelastic properties of fuzzy fiber reinforced composites", ***ASME Journal of Applied Mechanics***, November 2013, Vol. 80, 061010.

64. S. I. Kundalwal and **M. C. Ray**, "Effect of carbon nanotube waviness on the elastic properties of the fuzzy fiber reinforced composites", ***ASME Journal of Applied Mechanics***, March 2013, Vol. 80, 021010.

65. **M. C. Ray** and R. C. Batra, "Transient hydroelastic analysis of sandwich beam subjected to slamming in water", ***Thin-Walled Structures***, 2013, Vol. 72, pp. 206-216.

66. S. I. Kundalwal and **M. C. Ray**, "Improved thermoelastic coefficients of a novel short

fuzzy fiber reinforced composite with wavy carbon nanotubes", ***Journal of mechanics of materials and structures***, 2013.

67. S. I. Kundalwal and **M. C. Ray**, "Effective properties of a novel composite reinforced with short carbon fibers and radially aligned carbon nanotubes", ***Mechanics of Materials***, 2012, vol. 53, pp. 47-60.

68. S. I. Kundalwal and **M. C. Ray**, "Effective properties of a novel continuous fuzzy fiber-reinforced composite using the method of cells and the finite element method", ***European Journal of Mechanics - A/Solids***, 2012, Vol. 36, pp. 191-203.

69. S. I. Kundalwal and **M. C. Ray**, "Smart damping of laminated fuzzy fiber reinforced composite shells using 1-3 piezoelectric composites", ***Smart Materials and Structures***, 2013, Vol. 22, No. 10, art No. 105001.

70. P. H. Shah and **M. C. Ray**, "Active Structural-Acoustic Control of Laminated Composite Truncated Conical Shells Using Smart Damping Treatment", in press, ***ASME Journal of Vibrations and Acoustics,*** 2013,Vol. 135, art. 021001.

71. R. M. Kanasogi and **M. C. Ray**, "Control of Geometrically Nonlinear Vibrations of Skew Laminated Composite Plates using Skew or Rectangular 1-3 Piezoelectric Patches", ***International Journal of Mechanics and Materials in Design***, 2013, Vol. 9, No. 4, pp. 325-354.

72. **M. C. Ray** and J. N. Reddy, "Active damping of Laminated Cylindrical Shells Conveying Fluid Using 1-3 Piezoelectric Composites", ***Composite Structures***, 2013, Vol. 98, pp. 261-271.

73. D. Biswas and **M. C. Ray**, "Active Constrained Layer Damping of Geometrically Nonlinear Vibration of Rotating Composite Beams Using 1-3 Piezoelectric Composite", ***International Journal of Mechanics and Materials in Design***, 2013, Vol. 9, 83-104.

74. J. Shivakumar, M. H. Ashok and **M. C. Ray**, "Active Control of Geometrically Nonlinear Transient Vibrations of Laminated Composite Cylindrical Panels Using Piezoelectric Fiber Reinforced Composite", ***Acta Mechanica***, 2013, Vol. 224, No. 1, pp. 1-15.

75. R. Suresh Kumar and **M. C. Ray**, "Active Control of Geometrically Nonlinear Vibrations of Doubly Curved Smart Sandwich Shells Using 1-3 Piezoelectric Composites", ***Composite Structures***, 2013, Vol. 105, pp. 173-187.

76. S. K. Sarangi and **M. C. Ray**, "Smart control of nonlinear vibrations of doubly curved functionally graded laminated composite shells under a thermal environment using 1-3 piezoelectric composites", ***International Journal of Mechanics and Materials in Design***, 2013, Vol. 9, No. 3, pp. 253-280.

77. R. M. Kanasogi and **M. C. Ray**, "Active constrained layer damping of smart skew laminated composite plates using 1-3 piezoelectric composites", ***Journal of Composites***, 2013, art no. 824163.

78. S. K. Sarangi and **M. C. Ray**, "Smart control of nonlinear vibrations of Laminated plates using active fiber composites", ***International Journal of Structural Stability and Dynamics***, 2012, Vol. 12, No. 6, art No. 1250050.

79. R. Suresh Kumar and **M. C. Ray**, "Active Constrained Layer Damping of Geometrically Nonlinear Vibrations of Smart Laminated Composite Sandwich Plates Using 1-3 Piezoelectric Composites", ***International Journal of Mechanics and Materials in Design***, 2012, Vol. 8, No. 4, pp 359-380.

80. P. H. Shah and **M. C. Ray**, "Active Control of Laminated Composite Truncated Conical Shells Using Vertically and Obliquely Reinforced 1-3 Piezoelectric Composites" ***European Journal of Mechanics - A/Solids***, 2012, Vol. 32, pp. 1-12.

81. S. Panda and **M. C. Ray**, "Active Damping of Nonlinear Vibrations of Functionally Graded Laminated Composite Plates Using vertically/ obliquely Reinforced 1-3 piezoelectric Composite", ***ASME Journal of Vibrations and Acoustics***, 2012, Vol. 134, No. 2, art No. 021016.

82. R. Suresh Kumar and **M. C. Ray**, "Active Constrained Layer Damping of Smart Laminated Composite Sandwich Plates Using 1-3 Piezoelectric Composites", ***International Journal of Mechanics and Materials in Design***, 2012, Vol. 8, No. 3, pp. 197-218.

83. S. K. Sarangi and **M. C. Ray**, "Active fiber composites for smart damping of doubly curved lamianetd shells", ***World Academy of Science, Engineering and Technology***, 2011, Vol. 74, pp. 964-970.

84. S. I. Kundalwal and **M. C. Ray,** "Micromechanical analysis of fuzzy fiber reinforced composites", ***International Journal of Mechanics and Materials in Design,*** 2011, Vol. 7, N0. 2, pp. 149-166.

85. S. K. Sarangi and **M. C. Ray**, "Active damping of geometrically nonlinear vibrations of doubly curved laminated composite shells", ***Composite Structures***, 2011, Vol. 93, No. 12, pp.3216-3228.

86. S. K. Sarangi and **M. C. Ray**, "Active damping of laminated composite plates using vertically reinforced 1-3 piezoelectric composites", ***Acta Mechanica***, 2011, Vol. 222, No. 3-4, pp. 363-380.

87. S. K. Sarangi and **M. C. Ray**, "Active damping of geometrically nonlinear vibrations of laminated composite shallow shells using vertically/obliquely reinforced 1-3 piezoelectric composites", ***International Journal of Mechanics and Materials in Design,*** 2011, Vol. 7, No. 1, pp. 29-44.

88. **M. C. Ray** and A. K. Pradhan, **"**Active damping of laminated thin cylindrical

composite panels using vertically/obliquely reinforced 1-3 piezoelectric composites**"** ***Acta Mechanica,*** 2010, Vol. 209, No. 3-4, pp. 201-218.

89. S. K. Sarangi and **M. C. Ray**, "Smart damping of geometrically nonlinear vibrations of laminated composite beams using vertically reinforced 1-3 piezoelectric composites", ***Smart Materials and Structures,*** 2010, Vol. 19, art no. 075020**.**

90. **M. C. Ray** and J. Shivakumar, "Active constrained layer damping of geometrically nonlinear transient vibrations of composite plates using piezoelectric fiber reinforced composite", ***Thin Walled Structures***, 2009, vol. 47, pp. 178-189.

91. **M. C. Ray** and A Faye**, "**Theoretical and experimental investigations on Active Structural-Acoustic Control of thin Isotropic Plate Using Vertically reinforced 1-3 Piezoelectric Composite**"** ***Smart Materials and Structures***, 2009, vol. 18, 015012.

92. **M. C. Ray** and A Faye, **"**Active Structural-Acoustic Control of laminated composite plates using vertically / obliquely reinforced 1-3 Piezoelectric Composite**"**, ***International Journal of Mechanics and Materials in Design***, 2009, Vol. 5, No. 2, pp. 123-141.

93. **M. C. Ray** and R. C. Batra**, "**On the effective properties of carbon nanotube and piezoelectric fiber reinforced hybrid smart composites**"**, ***ASME Journal of Applied Mechanics,*** 2009, Vol. 76, No. 3, pp. 1-4.

94. S. Panda and **M. C. Ray**, "Control of Nonlinear Vibrations of Functionally Graded Plates Using 1-3 Piezoelectric Composite", ***AIAA*** Journal, 2009, Vol. 47, No.6, pp. 1421-1434.

95. S. Panda and **M. C. Ray**, "Active Control of Geometrically Nonlinear Vibrations of Functionally Graded Laminated Composite Plates Using Piezoelectric Fiber Reinforced Composite", ***Journal of Sound and Vibration***, 2009, Vol. 325, No. 1-2, pp. 186-205.

96. J. Shivakumar and **M. C. Ray, "**Geometrically Nonlinear finite element analysis of smart composite plates integrated with the patches of piezoelectric fiber-reinforced composite**",** ***Journal of Reinforced Plastics and Composites,*** 2009, Vol. 28, No. 7, pp. 769-790.

97. S. Panda and **M. C. Ray**, **"**Active constrained layer damping of geometrically nonlinear transient vibrations of smart functionally graded plates using piezoelectric fiber reinforced composite**",** ***Smart Materials and Structures,*** Vol. 17, 2008.

98. S. Panda and **M. C. Ray, "**Nonlinear finite element analysis of smart functionally graded plates integrated with a layer of piezoelectric fiber reinforced composite**",** ***Finite Elements in Analysis and Design,*** 2008, Vol. 44, pp. 493-504.

99. S. Panda and **M. C. Ray**, "Finite element analysis for geometrically nonlinear deformations of smart functionally graded plates using vertically reinforced 1-3

piezoelectric composite", ***International Journal of Mechanics and Materials in Design,*** 2008, vol. 4, pp.239-253.

100. **M. C. Ray** and A. K. Prodhan**, "**Performance of vertically and obliquely reinforced 1-3 piezoelectric composites for active damping of laminated composite shells**",** ***Journal of Sound and Vibration,*** 2008, Vol. 315, pp. 816-835.

101. J. Shivakumar and **M. C. Ray, "**Nonlinear analysis of smart cross-ply composite plates using piezoelectric fiber reinforced composite actuator**",** ***Mechanics of Advanced Materials and Structures,*** 2008, Vol. 15, No.1, pp. 40-52**.**

102. **M. C. Ray** and R. C. Batra**, "**Smart constrained layer damping of functionally graded circular cylindrical shells using vertically/obliquely reinforced 1-3 piezoelectric composite under a thermal environment**"** ***Smart Materials and Structures,*** 2008, vol. 17, art No. 055007**.**

103. S. Panda and **M. C. Ray**, "Geometrically Nonlinear Analysis of Smart Functionally Graded Plates Integrated with a Layer of Vertically reinforced 1-3 Piezoelectric Composite", ***Acta Mechanica***, 2008, Vol. 198, No. 3-4, pp. 235-251.

104. **M. C. Ray** and R. C. Batra**, "**Single-Walled Carbon Nanotube Reinforced 1-3 Piezoelectric Composite for Active Control of Smart Structures**",** ***Smart Materials and Structures,*** Vol. 16, 2007, pp. 1936-1947.

105. **M. C. Ray** and R. C. Batra**, "**Performance of vertically/obliquely reinforced 1-3 piezoelectric composites for active damping of functionally graded plates**",** ***AIAA Journal,*** Vol. 45, No. 7, 2007, pp. 1779-1783.

106. **M. C. Ray** and R. Balaji, **"**Active Structural-Acoustic Control of Laminated Cylindrical Panels Using Smart Damping Treatment**",** ***International Journal of Mechanical Sciences,*** Vol. 49, 2007, pp. 1001-1017.

107. **M. C. Ray** and A. K. Prodhan**, "**On the use of vertically reinforced 1-3 piezoelectric composites for hybrid damping of laminated composite plates**",** ***Mechanics of Advanced Materials and Structures,*** 2007, Vol. 14, No. 4, pp. 245-262.

108. B. A. Reddy and **M. C. Ray**, "Optimal control of smart functionally graded plates using piezoelectric fiber reinforced composites", ***Journal of Vibration and Control,*** 2007, Vol. 13, No. 6, pp. 795-814.

109. J. Shivakumar and **M. C. Ray, "**Geometrically Nonlinear analysis of antisymmetric angle-ply composite plates integrated with a layer of piezoelectric Fiber Reinforced Composite**",** ***Smart Materials and Structures,*** 2007, Vol. 16, pp. 754-762.

110. **M. C. Ray** and H. M. Sachade**, "**Exact solutions for the functionally graded plates integrated with a layer of Piezoelectric fiber reinforced composites**",** ***ASME Journal of Applied Mechanics,*** 2006, Vol. 73, No. 4., pp. 622-632.

111. **M. C. Ray** and H. M. Sachade**, "**Finite element analysis of smart functionally graded

plates**",** ***International Journal of Solids and Structures,*** 2006, Vol. 43, pp. 5468-5484.

112. **M. C. Ray** and A. K. Prodhan**,** **"**Performance of vertically reinforced 1-3 piezoelectric composites for active damping of smart structures**",** ***Smart Materials and Structures,*** 2006, Vol. 15, No. 1, pp. 631-641.

113. S. Panda and **M. C. Ray, "**Nonlinear analysis of smart functionally graded plates using piezoelectric fiber reinforced composites**",** ***Smart Materials & Structures,*** 2006, Vol. 15, pp. 1595-1604.

114. **M. C. Ray** and J. N. Reddy, **"**Active control of laminated cylindrical shells using piezoelectric fiber reinforced composites**",** ***Composite Science and Technology,*** 2005, Vo. 65, No. 7-8, pp. 1226-1236.

115. **M. C. Ray** and N. Mallik, **"**Performance of smart damping treatment using piezoelectric fiber reinforced composites**",** ***AIAA Journal,*** 2005, Vol. 43, No. 1, pp.184-193.

116. N. Mallik and **M. C. Ray, "**Exact solutions for static analysis of smart composite plates with a layer of piezoelectric fiber reinforced composites**",** ***International Journal of Mechanics and Materials in Design,*** 2005, Vol. 4, pp. 347-364.

117. **M. C. Ray** and J. N. Reddy**, "**Performance of piezoelectric fiber reinforced composites for active-structural acoustic control of laminated composite plates**",** ***IEEE Transaction on Ultrasonics, Ferroelectrics and Frequency Control,*** 2004, Vol. 51, No. 11, pp. 1477-1490.

118. **M. C. Ray** and J. N. Reddy**, "**Effect of delamination on the active constrained layer damping of laminated composite beams**",** ***AIAA Journal,*** 2004, Vol. 42, No. 6, pp. 1219-1226.

119. **M. C. Ray** and J. N. Reddy**, "**Optimal control of thin circular laminated composite shells using active constrained layer damping treatment**",** ***Smart Materials and Structures,*** 2004, Vol. 13, No. 1, pp. 64-72.

120. **M. C. Ray** and N. Mallik, **"**Finite element solutions for static analysis of smart structures with a layer of piezoelectric fiber reinforced composites**",** ***AIAA Journal,*** 2004, Vol. 42, No. 7, pp. 1398-1405.

121. **M. C. Ray** and N. Mallik, **"**Active Control of laminated Composite Beams using Piezoelectric Fiber Reinforced Composite Layer**",** ***Smart Materials and Structures,*** 2004, Vol. 13, No. 1, pp. 146-152.

122. N. Mallik and **M. C. Ray**, **"**Effective coefficients of piezoelectric fiber reinforced composites**"** ***AIAA Journal,*** 2003, Vol. 41, No. 4, pp. 704-710.

123. **M. C. Ray** and A. Baz**, "**Control of Non-linear Vibration of Beams Using Active Constrained Layer Damping**",** ***Journal of Vibration and Control,*** 2001, Vol. 7, pp.

539-549.

124. **M. C. Ray**, J. Oh and A. Baz**, "**Active Constrained Layer Damping of Thin Cylindrical Shells**",** ***Journal of Sound and Vibration,*** 2001, Vol. 240, No. 5, pp. 921-935.

125. **M. C. Ray**, R. Bhattacharyya and B. Samanta**, "**Exact Solutions for Dynamic Analysis of Composite Structures with Distributed Piezoelectric Sensors and Actuators**",** ***Computers & Structures,*** 1998, Vol. 66, No. 6, pp. 737-743.

126. **M. C. Ray** and A. Baz, **"**Optimization of Energy Dissipation of Active Constrained Layer Damping Treatments of Plate**",** ***Journal of Sound and Vibration,*** 1997, Vol. 208, No. 3, pp. 391-406.

Publications with more than one Co-author

127. M. Gupta, **M. C. Ray**, N. D. Patil and S. I. Kundalwal, 2021, "Dynamic modelling and analysis of smart carbon nanotube-based hybrid composite beams: Analytical and finite element study", ***Proc IMechE Part L: J Materials: Design and Applications***, DOI: 10.1177/14644207211019773.

128. Basutkar, R., Sai Sidhardh and **M. C. Ray**, 2019, "Static analysis of flexoelectric nanobeams incorporating surface effects using element free Galerkin method", ***European Journal of Mechanics - A/Solids***, Vol. 76, pp. 13-24, https://doi.org/10.1016/j.euromechsol.2019.02.013.

129. R. Kothari, S. I. Kundalwal, S. K. Sahu and **M. C. Ray,** 2017, "Modeling of thermomechanical properties of polymeric hybrid nanocomposites", ***Polymer Composites,*** DOI 10.1002/pc. 24483.

130. **M. C. Ray**, S. N. Atluri and Leiting Dong, 2015, "Simple Smart Finite Elements for the Analysis of Smart Composite Beams", ***Computers, Materials & Continuum***, Vol. 47, No. 3, pp. 143-177.

131. **M. C. Ray**, Roberto Guzman de Villoria and Brian L. Wardle**, "**Load Transfer Analysis in Short Carbon Fibers with Radially-Aligned Carbon Nanotubes Embedded in a Polymer Matrix**",** ***Journal of Advanced Materials,*** 2009, vol. 41, No. 4, pp. 82-94.

132. **M. C. Ray**, R. Bhattacharyya and B. Samanta**, "**Finite Element Model for Active Control of Intelligent Structures**",** ***AIAA Journal,*** 1996, Vol. 34, No. 9, pp. 1885-1893.

133. **M. C. Ray**, R. Bhattacharyya and B. Samanta**, "**Static Analysis of an Intelligent Structure by the Finite Element Method**"** ***Computers & Structures,*** 1994, Vol. 52, No. 4, pp. 617-631.

134. **M. C. Ray**, R. Bhattacharyya and B. Samanta**, "**Exact Solution for Static Analysis of

Intelligent Structures**",** ***AIAA Journal,*** 1993, Vol. 31, No. 9, pp. 1684-1691.

135. **M. C. Ray**, K. M. Rao and B. Samanta**, "**Exact Solution for Static Analysis of Intelligent Structure Under Cylindrical Bending**",** ***Computers & Structures,*** 1993, Vol. 47, pp. 1031-1042.

136. **M. C. Ray**, K. M. Rao and B. Samanta**, "**Exact Analysis of Coupled Electroelastic Behavior of a Piezoelectric Plate Under Cylindrical Bending**",** ***Computers & Structures,*** 1992, Vol. 45, pp. 667-677.