Publications

International Journal Articles

1. Chandraul, A., Murari, V &. Kumar, S., (2024). A Study on Forced Deployment Behaviour of Multi Creased Membrane Structure. *Thin-Walled Structures* ***(Under review)***
2. Yadav A, Kumar S & Kumar A, (2024). Investigation of MWCNT Dispersion in Epoxy-Based Shape Memory Polymer Using Probe Ultrasonication: Characterization and Mechanical Evaluation. *Polymer* ***(Under review)***
3. Yadav, A., Singh, S. K., Das, S., **Kumar, S.,** & Kumar, A. Shape memory polymer and composites for space applications: A review. Polymer Composites(https://doi.org/10.1002/pc.29707).
4. YADAV, A., Das, S., Badardinni, R., **Kumar, S.,** & Kumar, A. (2024). Effect of dual dispersion of carbon fiber and silica nanoparticles on recovery performance of shape memory epoxy. *Smart Materials and Structures*.33(6), 065044
5. Chandraul, A., Murari, V &. **Kumar, S.** (2024). A Review on Dynamic Analysis of Membrane Based Space Structures. *Advances in Space Research*, 74(2), 740-763.
6. Yadav, A., Singh, S. K., Das, S., **Kumar, S.,** & Kumar, A. (2023). Shape recovery and mechanical properties investigation of carbon fiber dispersed bisphenol-A based epoxy composite. *Smart Materials and Structures*, *32*(9), 095016.
7. Chandra M, Kumar K, Thakur P, Chattopadhyaya S, Alam F, & **Kumar S.** (2022) *Digital technologies, healthcare and Covid-19: insights from developing and emerging nations*. Health Technology (Berl). 2022; 12(2):547-568. doi: 10.1007/s12553-022-00650-1. Epub 2022 Mar 6. PMID: 35284203; PMCID: PMC8898601.
8. Chandra, M., **Kumar, S.,** Chattopadhyaya, S., Chatterjee, S., & Kumar, P. (2021). *A review on developments of deployable membrane-based reflector antennas*. Advances in Space Research, 68(9), 3749-3764.
9. Shinde, S. D., **Kumar, S**., & Upadhyay, S. H. (2021). *Investigation on material combination technique to enhance the anti-wrinkle and anti-vibration characteristics of the planar membrane reflector*. Proceedings of the Institution of Mechanical Engineers, Part C: Journal of Mechanical Engineering Science, 235(21), 5675-5683.
10. **Kumar, S.**, Upadhyay, S. H., & Vsevolod V Koryanov (2020), *Research and modelling of wrinkles and control of rectangular membrane structures with high-class modeling in on-orbit conditions*, Materials Science and Engineering, 882
11. **Kumar, S.**, Upadhyay, S. H., & Vsevolod V Koryanov (2020), *A wrinkling analysis and control of rectangular membrane structures with upscale modelling under on-orbit conditions,* Materials Science and Engineering, 882
12. **Kumar, S.**, Upadhyay, S. H. and Singh, K. S. (2018). *A new wrinkle free design of membrane structures for on-orbit space application*. International Journal of Mechanical and Materials Engineering, 37 (1)
13. **Kumar, S.**, Upadhyay, S. H., Singh, K. S; and Sakhare, S. (2018). *Influence factors analysis of membrane under Static and dynamic conditions*, SSME, ISRO, 17 (2).
14. **Kumar, S.**, Upadhyay, S. H., & Mathur, A. C. (2015). *Wrinkling simulation of membrane structures under tensile and shear loading*. Journal of Vibration Analysis, Measurement, and Control, 3(1), 17-33.

International/National Conference Papers / Symposium

1. Amrendra Kumar Singh and **Satish Kumar**, "Numerical Simulation and Dynamic Stability During Inflation of Membrane Based Torus Structures" International Conference on Space for Sustainability: Science, Technology, Education and Policy (S2: STEP2025) & 6th Indian Planetary

Science Conference (IPSC-2025) Centre for Space Science and Technology, IIT Roorkee, 4th -7th March 2025.

2. Amiy Chandraul; Murari V; and **Satish Kumar**, "Wrinkling Analysis of Adaptive Membrane Structures at On-orbit Conditions" International Conference on Space for Sustainability: Science, Technology, Education and Policy (S2: STEP2025) & 6th Indian Planetary Science Conference (IPSC-2025) Centre for Space Science and Technology, IIT Roorkee, 4th -7th March 2025.
3. Amiy Chandraul; Paras Nath Rai; Murari V; and **Satish Kumar**, "Neutral Angle Characterization in Single-Creased Membranes: An Experimental Approach" International Conference on Space for Sustainability: Science, Technology, Education and Policy (S2: STEP2025) & 6th Indian Planetary Science Conference (IPSC-2025) Centre for Space Science and Technology, IIT Roorkee, 4th -7th March 2025.
4. Pradeep Singh and **Satish Kumar** , "Dynamics Analysis of Circular Torus Membrane Based Inflatable Antenna" International Conference on Space for Sustainability: Science, Technology, Education and Policy (S2: STEP2025) & 6th Indian Planetary Science Conference (IPSC-2025) Centre for Space Science and Technology, IIT Roorkee, 4th -7th March 2025.
5. Pradeep Singh and **Satish Kumar**, "Numerical Analysis of Inflatable Membrane Structures and Behavior of Folding and Deployment", International Conference on Advances in Aerospace and Energy Systems (IAES 2024), 4th - 6th April, 2024, LPSC, ISRO, Valiamala Thiruvananthapuram Kerala, India.
6. Amiy chandraul, V. Murari, and **Satish kumar**, "Effect of Added Mass of Air on the Vibration Analysis of the Inflatable Torus", International Conference on Advances in Aerospace and Energy Systems (IAES 2024), 4th - 6th April, 2024, LPSC, ISRO, Valiamala Thiruvananthapuram Kerala, India.
7. Amiy chandraul, V. Murari, and **Satish kumar**, "Parametric Study for Modal Analysis Of Inflatable Torus", International Conference on Innovative Science, Engineering & Technology (ICISTECH2023), 7th - 8th December, 2023, Amity University, Patna.
8. Avadesh Yadav, Ratnesh Kumar Yadav, Abhishek Kumar and **Satish Kumar** "Temperature-Step/Hold Multi-Frequency Dynamic
   Mechanical Analysis to Study Viscoelastic Behaviour of Shape Memory Epoxy for Space Structure and Component" Third Global Conference on Recent Advances in Sustainable Materials (GC-RASM 2023), PGP College of Engineering & Technology, Tamil Nadu, India, 27 - 28, July 2023.
9. **Satish Kumar,** *Study and Analysis of Inflatable support system for defence application*, Global Indian Young Scientists Research and Innovation Conference 2023, 31st May and 2nd June at National Agricultural Science Complex - ICAR, New Delhi.
10. Anmol Yadav and **Satish Kumar**, New approach for dynamic analysis of ultra-thin membrane structures using finite element approach under space condition. 5th Indian Conference On Applied Mechanics (INCAM 2022), November 11-13, 2022, National Institute of Technology Jamshedpur
11. Sourabh Kumar Singh, Avadesh Yadav, Akanksha Singh, Abhishek Kumar, and **Satish Kumar**, Analysis of Copper Reinforcement Effect on Epoxy Based Shape Memory Polymer for Smart Actuators. 5th Indian Conference On Applied Mechanics (INCAM 2022), November 11-13, 2022, National Institute of Technology Jamshedpur
12. Pradeep Singh and **Satish Kumar,** Numerical Analysis of Inflatable Membrane Structures and Behavior of Folding and Deployment, International Conference on Recent Advances in Mechanical Engineering 2022 (ICRAM-2022), 25 – 27 August 2022, Department Of Mechanical Engineering Indian Institute of Technology Jodhpur, Rajasthan, India-342030
13. Kuldeep Singh and **Satish Kumar,** Numerical Analysis of Wrinkled Configuration in Thin Multilayer Membrane Structures, International Conference on Recent Advances in Mechanical Engineering

2022 (ICRAM-2022), 25 – 27 August 2022, Department Of Mechanical Engineering Indian Institute of Technology Jodhpur, Rajasthan, India-342030

14. Sourabh Kumar Singh, Avadesh Yadav, Abhisekh Kumar , and **Satish Kumar**, ANALYSIS OF SHAPE MEMORY POLYMER BASED SPACE ACTUATORS National Conference on Artificial Intelligence enabled Aerobots and Hydrobots (ASET-2022), Vikram Sarabhai Space Centre, Thiruvananthapuram, March 17 - 18, 2022
15. Kuldeep Singh and **Satish Kumar,** Simulation of wrinkling behavior of thin membrane structures National Conference on Artificial Intelligence enabled Aerobots and Hydrobots (ASET-2022), Vikram Sarabhai Space Centre, Thiruvananthapuram, March 17 - 18, 2022
16. Pradeep Singh and **Satish Kumar**, Analysis of Shape Stability of Membrane Structure with Lattice Reinforcement, International Conference on Advancements in Interdisciplinary Research, Theme: Smart and Sustainable Society (AIR2022) Motilal Nehru National Institute of Technology (MNNIT) Allahabad, India, May 6-7, 2022
17. Amiy chandraul, V. Murari, and **Satish kumar**, Dynamic analysis and shape control of membrane structures, International Conference on Advancements in Interdisciplinary Research, Theme: Smart and Sustainable Society (AIR2022) Motilal Nehru National Institute of Technology (MNNIT) Allahabad, India, May 6-7, 2022.
18. Vikash Kumar and **Satish Kumar,** Modeling and Simulation of piezoelectric based Hybrid Energy Harvesting System, International Conference on Advancements in Interdisciplinary Research, Theme: Smart and Sustainable Society (AIR2022) Motilal Nehru National Institute of Technology (MNNIT) Allahabad, India, May 6-7, 2022.
19. Devendra Kumar Gautam, Audhesh Narayan, **Satish Kumar,** and Ajaya Bharti, Finite Element Analysis of Laser Cladding Process, International Conference on Advancements in Interdisciplinary Research, Theme: Smart and Sustainable Society (AIR2022) Motilal Nehru National Institute of Technology (MNNIT) Allahabad, India, May 6-7, 2022.
20. Sreetam Das, Sourabh Kumar Singh, Avadesh Yadav, **Satish Kumar,** and Abhishek Kumar, Finite Element Analysis of a Shape Memory Polymer for Space Actuator Applications, International Conference on Advancements in Interdisciplinary Research, Theme: Smart and Sustainable Society (AIR2022) Motilal Nehru National Institute of Technology (MNNIT) Allahabad, India, May 6-7, 2022.
21. Raghuvanshi , V;& **Kumar., S** (2021) Scaling Analysis of Rectangular Planner Membrane Structures Considering Various Parameters, International Conference on Mechanical Engineering (INCOME-2021), 25 - 26 November, 2021,Netaji Subhas University of Technology, New Delhi, India.
22. Kumar, V; Pandey, R; & **Kumar., S** (2021) A Finite Element Method of Free Vibration Analysis of Functionally Graded Beam, International Conference on Mechanical Engineering (INCOME-2021), 25 - 26 November, 2021,Netaji Subhas University of Technology, New Delhi, India.
23. Patel, K; & **Kumar., S** (2021) Vibration Analysis of Membrane Based Inflatable Torus, International Conference on Mechanical Engineering (INCOME-2021), 25 - 26 November, 2021,Netaji Subhas University of Technology, New Delhi, India.
24. Pandey, S; & **Kumar., S** (2021) A Numerical Analysis of the effect of wind speed on Hybrid Energy Harvesting System, International Conference on Mechanical Engineering (INCOME-2021), 25 - 26 November, 2021,Netaji Subhas University of Technology, New Delhi, India
25. Siddiqui,A; Murari, V; & **Kumar., S** (2021) Simulation of Deployment of Inflatable Structures Through Uniform Pressure Method, International Conference on Advanced Manufacturing and Materials Processing (CAMMP 2021). July 24 - 25, 2021., MNIT Jaipur, India.
26. Kumar, V; Pandey, R; & **Kumar, S**, (2021) Recent Research of Active Vibration Control Analysis of Functionally Graded Materials using Piezoelectric Materials: A Review, International Conference

on Sustainable Engineering" (ICSE-2021) organized by Government Engineering College Bikaner, Rajasthan, held on 26 – 27 February, 2021

27. **Satish Kumar.,** Kunal Kumar, Prabhat Thakur & Prakash Kumar (2019), Design and Analysis of MFC based Energy Harvesting Systems,6th International Conference on Production and Industrial Engineering(CPIE-2019), 8th-10th June 2019, NIT Jalandhar, Punjab, India
28. **Kumar, S.,** Kamaliya, P.; Sharma, H., &;Upadhyay, S. H.,(2018), A novel concept of MFCbased energy harvesting systems, Advanced Energy and Nano Materials (ANEM-2018),12th-14th December 2018, The University of Western Australia, Perth
29. **Kumar, S.,** Upadhyay, S. H., and Singh K.S.(2018), *Shape control analysis of inflatable membrane structures using an adaptive genetic algorithm*, 14th International Symposium on Materials in the Space Environment, 1st -5th October, 2018 Biarritz, France.
30. **Kumar, S.,** and Upadhyay, S. H. (2018). *New adaptive design of membrane based reflector for space application*, 4th International Conference and Exhibition on Satellite & Space Missions (Satellite-2018), 18th-20th June, 2018 Rome, Italy.
31. **Kumar, S.,** and Upadhyay, S. H. (2018). *Experimental verification of novel analytical wrinkling control mechanism of planar membrane reflector for space application*, 16th European Conference on Spacecraft Structures Materials and Environmental Testing, (ECSSMET-2018), 28th May -1stJune, 2018, Noordwijk, Netherlands.
32. **Kumar, S.,** and Upadhyay, S. H. (2018). Cutting pattern analysis of parabolic inflatable reflector, 1st research scholar day, (RSM-2018), 16th May 2018, MIED, IIT Roorkee, India
33. **Kumar, S.,** and Upadhyay, S. H. (2017). *Analysis of Real Time Adaptive Control Mechanism for Space Antenna Reflector*. 19th International Conference on Human-Robot Interaction (ICHRI-2017), 19th -20thMay, 2017, Dubai, UAE.
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35. **Kumar, S.,** and Upadhyay, S. H. (2016). *Wrinkling Prediction of Space-Based Membrane Reflector under Thermal and Mechanical Loading*. 14thEuropean Conference on Spacecraft Structures Materials and Environmental Testing, (ECSSMET-2016), 27th -30th, September 2016, Toulouse, France.
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37. **Kumar, S.,** and Upadhyay, S. H. (2016). *Nonlinear Vibration Analysis and Control of Thin Film Membrane Structure*. National Tribology Conference (NTC-2016), 8th-10thDecember 2016. IIT (BHU) Varanasi, India.
38. **Kumar, S.,** and Upadhyay, S. H. (2015). *Wrinkling Analysis of Small Diameter Membrane Reflector*. 12th International Conference on Vibration Problems (ICOVP - 2015), 14th -17th December 2015, IIT Guwahati, India.
39. **Kumar, S.,** and Upadhyay, S. H. (2015). *Shape Control of a Kapton Based Membrane Structures for Space Application*. 60th Congress (an International Conference) of Indian Society of Theoretical and Applied Mechanic (ISTAM - 2015), 16th -19th December 2015, MNIT Jaipur, India.

Patents

- **Kumar, S**., Upadhyay, S. H., and Singh K.S. (2018), Adaptive shape control mechanismfor planar membrane structure (Indian Patent , Application No.. 201811037750, patent number is 47058)
- **Satish Kumar** and Kumari Pushpa. (2024), "Highly Flexible Thin Membrane Singly Curved Cylindrical Parabolic Antenna Reflector"(Indian Patent , filed on 09-02-2024)

Book Chapters

1. Siddiqui, A. A., Murari, V., & **Kumar, S.** (2022). Simulation of Deployment of Inflatable Structures Through Uniform Pressure Method. In Soft Computing in Materials Development and its Sustainability in the Manufacturing Sector (pp. 145-158). CRC Press.
2. Yadav A, Kumar A & **Kumar S** (2024). Analysis of Copper Reinforcement Effect on Epoxy-Based Shape Memory Polymer for Smart Actuators (Chapter 14), Lect. Notes Mechanical Engineering, Advances in Applied Mechanics, Springer Nature
3. Chandraul, A., Singh, P., Chilwal, A., Murari, V., & **Kumar, S**. (2025). Parametric Study for Modal Analysis of an Inflatable Torus. In Advanced Engineering and Sustainable Solutions (pp. 53-63). Cham: Springer Nature Switzerland.