

## Piyush Gaur, Ph.D. (IIT Delhi)

Department of Mechanical & Aerospace Engineering

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### CAREER SUMMARY

Accomplished academic and research professional with over 9 years of interdisciplinary research experience in experimental and computational biomechanics, and advanced nanocomposite applications in the Aerospace/Defense industry. Adept at fostering academic excellence and securing tenure with 4+ years of teaching experience at the undergraduate and postgraduate levels. Proficient in materials research, data analysis, with a strong portfolio of 14+ research publications, 12 conference presentations, and 10 published/filed patents.

### EDUCATIONAL QUALIFICATIONS

DEGREE	BRANCH	INSTITUTE/UNIVERSITY	SPECIALIZATION	YEAR	CGPA/% WITH DIV
Ph.D.	Mechanical Engineering	IIT Delhi	Impact Biomechanics	Jan 2012-Oct 2019	7.83
MSc (Research)	Mechanical & Automotive Engineering	Coventry University, UK	Fatigue and Fracture	Sep 2010 - July 2012	N/A
MSc	Automotive Engineering	Coventry University, UK	Automotive Design	Jan 2009 - July 2010	68.71/Ist Div with Merit
B. Tech	Mechanical Engineering	HCST, Mathura/UP Technical University, Lucknow	N/A	July 2004 - June 2008	74.24/Ist Div

- **Ph.D. Thesis:** Characterization of Aorta and Diaphragm at High Strain Rate Loading. Supervisors: Dr Anoop Chawla and Dr Sudipto Mukherjee.
- **MS (Research Thesis):** Investigation of Fatigue Crack Propagation in Adhesively Bonded Joints used in Aluminium Vehicle Structures.

### RESEARCH INTERESTS

Mechanics of Materials, Composites, Biomechanics, Impact and Blast mechanism, Material Characterization.

### PROFESSIONAL/ACADEMIC APPOINTMENTS

DESIGNATION	DEPARTMENT	UNIVERSITY/COLLEGE	DURATION
Assistant Professor (Senior Scale)	Mechanical & Aerospace Engineering	UPES, Dehradun	June 22 - Present

Associate Professor	School of Aeronautical Sciences	Hindustan Institute of Technology & Science, Padur, Chennai	Jan 21 - May 22
Principal Project Scientist (Postdoc)	JATC-HBM Research Lab	IIT Delhi	July 19 - Dec 20
Assistant Professor	Mechanical Engineering Department, IET	JK Lakshmipat University, Jaipur	Jan 19 - June 19
Guest Visiting Faculty	N/A	WILP, BITS Pilani	Sep 2017 - Aug 2018

### **TEACHING INTERESTS/SUBJECTS TAUGHT**

- Machine Design, Engineering Mechanics, Fracture Mechanics, Finite Element Methods (**Taught at BITS Pilani WILP, JK Lakshmipat University, HITS Chennai, UPES Dehradun**).
- CAE Applications in Automotive Design Lab, Computational Mechanics Lab, Composite Materials Laboratory (**specialized labs at UPES Dehradun**)
- Automotive Subsystem Design, Mechanics of Materials, CAD Applications in Automotive Design Lab, Warfare Simulation and Strategies, Introduction to Materials Modelling (**Advanced topics at UPES Dehradun**)

### **SKILLS**

<b>THEORETICAL SKILLS</b>	<b>SOFTWARE SKILLS</b>	<b>EXPERIMENTAL SKILLS</b>
Material Modelling	LS Dyna for Impact, Blast and Human Body Analysis	Low Velocity Drop Tower testing, Hand-lay-up and VARTM for composites including several ASTM based Testing.
Inverse FEM	Materialize Mimics	High Speed Biaxial Tensile Testing Rig
Impact and Blast mechanics	MS Office & Matlab	Split Pressure Hopkinson Bar
Biomaterials and Implants	Hyperfit, M-Calibration	High Speed data acquisition system (Dewesoft & NI)
Human Body Modelling	Hypermesh and Hyperstudy	Dynamic Load Cells & Strain Gauges
Human Body Tolerance Analysis and Characterization		High Speed Camera with DIC
High Strain rate characterization of materials, Composites.		High intensity lighting for impact tests

### **MEMBERSHIPS/EDITORIAL SERVICES**

<b>MEMBERSHIPS</b>	<b>EDITORIAL SERVICES</b>
Biomedical Engineering Society of India, Life Member, LM 1263	Biomedical Engineering Online, Springer, Reviewer

Materials Research Society of India, Life Member LMB 3155	Physiological Measurements, IOP Science, Reviewer
Indian Society of Technical Education, Applied	AIEC reviewer

### **HONORS/AWARDS/LECTURES/FDPs**

- **2004-2008** - Participated in and won prizes in paper presentations, debates and elocutions.
- **2009-2010**- Won International merit scholarship from Coventry University, UK to pursue MSc in Automotive Engineering.
- **2010-2011**- Awarded M.Sc.(R) research scholarship by Coventry University, UK to pursue research in the field of adhesive bonding under Dr. Paul Briskham in conjunction with Jaguar Land Rover, UK.
- **2012-2014** - Awarded Volvo foundation research fellowship by IIT Delhi to present research papers in International Conferences.
- **March 2013** – Invited as guest speaker to deliver a talk on, “Advances in FEM with emphasis on Bio- mechanics and Fracture Biomechanics” to Graduate and Post Graduate students at DIT University, Dehradun, India.
- **October 2013** – Presented a seminar on “Fracture Mechanics based testing of adhesively bonded joints” held at International Conference on Smart Technologies for Mechanical Engineering, Delhi Technological University. New Delhi, India.
- **December 2015** – Presented a talk on “Experimental characterization of diaphragm and aorta at high strain rate loading” at International Course in Transportation Planning and Safety held at TRIPP New Delhi.
- **2017-18** – Awarded MOUD fellowship by IIT Delhi to present papers in international conferences.
- **Aug 2020** – Presented a seminar on “Characterization and Constitutive Modelling of Soft Tissues under Impact” at the Hindustan Institute of Technology and Science, Padur Chennai.
- **June 21** – Attended FDP Entitled, “Design of Experiments”, Conducted by Department of Aeronautical Engineering, Bharath Institute of Higher Education and Research, India.
- **Dec 21** – Participated and attended FDP on, “Recent trends and challenges in Robotics and Automation”, conducted by Department of Mechanical & Mechatronics Engineering, Manipal University, Jaipur.
- **Jan 22** – Participated and attended FDP on, “Advancement in Aerospace Materials: Manufacturing Testing and Characterization”, conducted by Department of Aeronautical Engineering, Hindusthan College of Engineering and Technology, Coimbatore.
- **March 22** – Participated and attended six days FDP on, “Design, optimization, and manufacturing of Materials,” conducted and organized by Department of Mechanical Engineering, SSN College of Engineering, Chennai.
- **May 16 – May 21** – Participated and attended five days FDP on, “AI/ML applications using MATLAB for renewable energy applications”. Organized and Conducted by UPES and Asian Institute of Technology, Bangkok, Thailand.
- **Honorary Fellow Member and Director** – Scientific Research – Aeronautical Sector Skill Council (ASSC).
- Appointed as Scientific Advisor by Dautya Aerospace Pvt Ltd, Bengaluru.

### **STUDENTS (PhD/MTECH/B.TECH)**

<b>Bachelor THESIS</b>	<b>Master's THESIS</b>	<b>PhD Thesis</b>
7 (4 Completed, 3 Ongoing)	None so far.	1 under progress
<b>PhD Thesis (1 Under Progress, Thesis submission expected - May/June 2025)</b>		
<b>Purva Uniyal, " Development and Characterization of Nanosilica Toughened Reinforced Glass Fiber Composites for Aerospace Applications.</b>		
<b>Bachelor's Thesis</b>		
<b>1. Rishi Suhas Karandikar, Soumitra Manish Dodkey, S Srinidhi, "Development and Characterization of PC and Kevlar based Nano-Hybrid Composite Materials for Aerospace and Defence Applications".2021-22. Students Awarded with highest CGPA.</b>		
<b>2. Bhumi Sharma, Mohammad Tahir, S Sunita, "Effect of Silica and Seashell Nano Fillers on Mechanical, and Impact properties of Kevlar based Nanocomposites. 2021-22.</b>		
<b>3. Unnati Parmar, " Mechanical and Thermal Characterization of Graphene Reinforced Glass Composites for Light Weight Aerospace Applications". Continuing, 23 - 24.</b>		
<b>4. Punya Bansal, " Design and Development of Graphene Reinforced Polymer Composites for Vehicular Armour Applications" (Under Progress).</b>		
<b>5. Shyreyansh Rai, " Parameter Identification and Material Modelling of High-Strength Steel and Aluminium Alloys Using Strain Rate-Dependent SHPB Data for Automotive Related Defense Applications (Under Progress).</b>		

### **RESEARCH PROPOSALS (SUBMITTED/IN REVIEW/COMPLETED)**

#### **1. Experimental Investigation on Low Velocity Impact Behaviour of MWCNT based Hybrid Nanocomposites**

- Submitting Agency: UPES Seed Grant
- Status: Completed
- Budget: ₹380,000
- Role: Principal Investigator

#### **2. Mechanical Impact and Thermal Characterization of Hybrid Nanocomposites for Ballistic Helmets**

- Submitting/Funding Agency: UPES Seed Grant
- Status: Completed
- Budget: ₹360,000.
- Role: Principal Investigator

#### **3. Studies on Graphene Reinforced Composites for Drones and Ballistic Helmets Applications.**

- Submitting/Funding Agency: UPES Dehradun Shodh Grant
- Status: Completed
- Budget: ₹1 Lakh
- Role: Principal Investigator

#### **4. Development of Soft Body Armoured Lightweight Nanocomposite Material with Enhanced Ballistic Protection.**

- Submitting/Funding Agency: SERB DST TARE Fellowship Grant, Gov of India.
- Status: Under Progress (Completion date: Oct 2025).
- Budget: ₹18.3 Lakhs
- Role: Principal Investigator

- Mentor: Dr. Indraveer Singh, IIT Roorkee.

### **PUBLICATIONS (ACCEPTED/IN REVIEW/IN PREPARATION)**

<b>S. No</b>	<b>Publications Form</b>	<b>Accepted/In-Press</b>	<b>Submitted/in Review</b>
1	Journal Papers	17 (SCI/SCIE = 7, Scopus = 7, Non-SCI/Scopus = 3)	2
2	Conferences (National/International)	12	1
3	Patents	11 (Published = 9, Submitted = 2)	2
4	Book Chapter	1	1

### **JOURNAL PUBLICATIONS**

- **Piyush Gaur**, Anoop Chawla, Khyati Verma, Sudipto Mukherjee, Sanjeev Lalvani, Rajesh Malhotra, Christian Mayer, “Characterization of human diaphragm at high strain rate loading”, Journal of the Mechanical Behaviour of Biomedical Materials, Volume 60, July 2016, Pages 603-616, ISSN 1751-6161, 3.
- **Piyush Gaur**, Anoop Chawla, Khyati Verma, Sudipto Mukherjee, Sanjeev Lalvani, Rajesh Malhotra, “High-rate failure properties of human aortic tissue under longitudinal extension”, International Journal of Experimental and Computational Biomechanics, Vol 4, Nos. 2/3, pp 125-151. DOI: 10.1504/IJECB.2018.10013568.
- **Piyush Gaur**, Khyati Verma, Anoop Chawla, Sudipto Mukherjee, Mohit Jain, Christian Mayer, Ravi Kiran Chitteti, Pronoy Ghosh, Rajesh Malhotra & Sanjeev Lalvani (2020) A bilinear structural constitutive model for strain rate-dependent behaviour of human diaphragm tissue, International Journal of Crashworthiness, 25:3, 284-298, DOI: 10.1080/13588265.2019.1583423.
- **Piyush Gaur**, Sanyam Sharma, Devendra Kumar, Anoop Chawla, Sudipto Mukherjee, Sanjeev Lalwani & Rajesh Malhotra (2019): High-rate failure properties of porcine aortic tissue under uniaxial tension, International Journal of Crashworthiness, DOI: 10.1080/13588265.2019.1688454.
- Khyati Verma, Sudipto Mukherjee, **Piyush Gaur**, Anoop Chawla, Rajesh Malhotra, Sanjeev Lalwani, “High strain rate compressive behaviour of human heart”, International Journal of Experimental and Computational Biomechanics, Inderscience Publishers, Vol 4, Nos. 2/3, pp 152-174. DOI: 10.1504/IJECB.2018.10013572.
- **Piyush Gaur**, Sanyam Sharma, Devendra Kumar, Anoop Chawla, Sudipto Mukherjee, Mohit Jain, Christian Mayer, Ravi Kiran Chitteti, Pronoy Ghosh, Rajesh Malhotra & Sanjeev Lalwani (2020) Inverse material characterization of human aortic tissue for traumatic injury in motor vehicle crashes, International Journal of Crashworthiness, DOI: 10.1080/13588265.2020.1807678.
- **Piyush Gaur**, Ravi Shankar Prasad, “Investigation of fatigue crack propagation in epoxy-based peel and lap shear joints used in aluminium vehicle structures using fatigue testing, finite element modelling and curve-fitting models” Applied Engineering Letters, Vol 4, Dec 2019, pp 136-150, . DOI: doi.org/10.18485/aeletters.2019.4.4. x.

- Deepika Mishra, Ravishankar Prasad, Mohd Zubair, **Piyush Gaur**," An ANFIS Model for Study of Surface Roughness for Metallic Materials on Optimized Machining Parameters", ARCTIC Journal, Vol. 73(11), November 2020, pp 106-134.
- Natrayan, S. Kaliappan, Gururaj Hatti, Pravin P. Patil, **Piyush Gaur**, T. Manikandan, P. Murugan, "Influence the Graphene Filler Addition on the Tensile Behaviour of Natural Kenaf Fiber-Based Hybrid Nanocomposites", Journal of Nanomaterials, vol. 2022, Article ID 3554026, 8 pages, 2022. <https://doi.org/10.1155/2022/3554026>.
- P. K. Dhal, J. Uma, **Piyush Gaur**, D. Prasad, Melvin Victor Depoures, A. Rajkumar, M. Ramesh, Praveen Bhai Patel, Habtewolde Ababu Birhanu, "A Review on Potential Opportunities to Preheat the Batteries Using a Finned Solar Air Energizer to Enhance Power Quality and Thermal Management in Low-Temperature Surroundings", International Transactions on Electrical Energy Systems, vol. 2022, Article ID 6276789, 11 pages, 2022. <https://doi.org/10.1155/2022/6276789>.
- Senthil Kumar, S., V.L. Raja, **Piyush Gaur**, Pravin P. Patil, L. Natrayan, and S. Kaliappan. "Experimental Investigations on the Tensile and Bending Behaviour of Natural Filler Particles Reinforced Polymer Composites." Applied Mechanics and Materials. Trans Tech Publications, Ltd., February 17, 2023. <https://doi.org/10.4028/p-f6i955>.
- Managuli, V., Bothra, Y. S., S, S. K., **Gaur, P.**, Ch, P. L., & racharya, racharya. (2023). Overview of Mechanical Characterization of Bone using Nanoindentation Technique and Its Applications. In Engineered Science. <http://dx.doi.org/10.30919/es8d820>.
- S. Kaliappan, S. Syath Abuthakeer, **Piyush Gaur**, Pravin P. Patil, G. Bhavani, M. Logesh; A study on multi-walled carbon nanotube reinforced Al7075 nano composites by P/M route. AIP Conference Proceedings 12 May 2023; 2747 (1): 020019.
- Hosseini, Mahdi, Gaff, Milan, Li, Haitao, Konvalinka, Petr, Lair, John, Hui, David, Ghosh, Pritam, Hosseini, Ahmad, **Gaur, Piyush**, Lorenzo, Rodolfo and Corbi, Ottavia. "A review of the performance of fibre-reinforced composite laminates with carbon nanotubes" Nanotechnology Reviews, vol. 12, no. 1, 2023, pp. 20230164. <https://doi.org/10.1515/ntrev-2023-0164>.
- Uniyal, P., **Gaur, P.**, Yadav, J., Khan, T., & Ahmed, O. S. (2024). A Review on the Effect of Metal Oxide Nanoparticles on Tribological Properties of Bio-lubricants. ACS Omega. <https://doi.org/10.1021/acsomega.3c08279>.
- **Piyush Gaur**, Karan Gupta, Poonam Sharma, Tabrej Khan, Mansour Aloufi, " A Comprehensive Review of Graphene-Based Nanomaterials for Ballistic and Impact Resistance in Defense Applications, Heliyon, Elsevier, Accepted June 2025.
- Purva Uniyal, **Piyush Gaur**, Jitendra Yadav, Neelanchali Asija Bhalla, Jimmy Mangalam, " Nanosilica Toughened Epoxy Polymer Composites for Aerospace Applications: A Comprehensive Review", Submitted to Composite Structures, In Review.
- **Piyush Gaur**, Vikas Kumar Saxsena, et al, " Experimental Investigations on Mechanical, Thermal, Impact and Ballistic Properties of Graphene Reinforced Kevlar/Glass Fiber Composites", Submitted to Composite Science and Technology, In review.

#### CONFERENCES(INTERNATIONAL/NATIONAL)

- Khyati Verma, Piyush Gaur, Anoop Chawla, Sudipto Mukherjee, Sanjeev Lalwani, Rajesh Malhotra, "Inverse Material characterization of Heart under Dynamic Impact", SIMBIO-M International Conference, Stratford-Upon-Avon, United Kingdom, June 2018.
- Piyush Gaur, Khyati Verma, Anoop Chawla, Sudipto Mukherjee, Sanjeev Lalwani, Rajesh Malhotra, Christian Mayer, Pronoy Ghosh, Ravi Kiran Chitteti, "In Vitro Characterization of

Human Aortic Tissue under Uniaxial Tension”, Proceedings of International Conference on Biomedical Technology (ICBT), Hannover, Germany, Nov – 2017.

- Khyati Verma, Piyush Gaur, Anoop Chawla, Sudipto Mukherjee, Sanjeev Lalwani, Rajesh Malhotra, “A Bilinear Structural Constitutive Model for Strain Rate Dependent Behaviour of Human Heart”, Proceedings of International Conference on Biomedical Technology (ICBT), Hannover, Germany, Nov – 2017.
- Piyush Gaur, Paul Briskham, Ravi Shankar Prasad, “A New Method to Predict Fatigue Crack Propagation Rates in Adhesively Bonded Joints subjected to Model I loading”, Proceedings of the International Conference on Smart Technologies in Mechanical Engineering, Delhi Technological University, 2013, ISBN: 978-93-83083-35-0, DOI: 10.13140/RG.2.1.3434.7682.
- Piyush Gaur and Bhargav Prajwal Pathri, “Behaviour and Simulation of a car model under different design conditions using low speed wind tunnel”, Proceedings of International Conference on Smart Technologies for Mechanical Engineering, Delhi Technological University (STME –2013), 2013, Page – 11-13, ISBN: 978-93-83083-35.
- D. Singh, G.N. Vijaya Dharshan, A. Akshay, R.R. Kumar, P. Gaur, C. Ganesan, J. Jensin Joshua, M.S. Nisha, Investigation of fatigue behaviour of Kevlar composites with nano-Graphene filled epoxy resin, Materials Today: Proceedings, Volume 62, Part 2, 2022, Pages 773-780, ISSN 2214-7853, <https://doi.org/10.1016/j.matpr.2022.03.674>.
- D. Singh, R.R. Kumar, P. Gaur, D. Rahul, G. Jonathan Kiran, S. Vijay, S. Surya, J. Jensin Joshua, S. Subha, Investigation on drilling response of Carbon-Graphene and Kevlar-Graphene composites, Materials Today: Proceedings, Volume 62, Part 2, 2022, Pages 755-762, ISSN 2214-7853, <https://doi.org/10.1016/j.matpr.2022.03.671>.
- Boban, S. Kurian, T.J. Pooppally, R.R. Kumar, P. Gaur, D. Singh, " Numerical investigation on the strength of different types of adhesively bonded lap joints", Materials Today: Proceedings, 2022, ISSN 22147853, <https://doi.org/10.1016/j.matpr.2022.09.213>.
- J.M. Krishna Teja, P. Chris Doel Biju, Ch. Goutham Sai Aditya Varma, R.R. Kumar, D. Singh, P. Gaur, Fatigue behaviour of hybrid eco-composites: A review, Materials Today: Proceedings, 2022, ISSN 2214-7853, <https://doi.org/10.1016/j.matpr.2022.09.211>.
- Dodkey, S. M., Karandikar, R. S., Srinidhi, S., Gaur, P., Managuli, V., Muthukumar, C., Singh, D., Kumar, R. R., & Suresh, C. (2022). A comparative study on the effect of nano seashell, multiwall carbon nanotubes and nano alumina on mechanical and impact properties of bidirectional Kevlar/epoxy composite. IOP Conference Series: Materials Science and Engineering, 1248(1), 012085. <https://doi.org/10.1088/1757-899X/1248/1/012085>.
- Sharma, B., Sachithanandam, S., Taahir, M., Gaur, P., Muthukumar, C., Singh, D., & Kumar, R. R. (2022). Effect of Nanosilica and Multiwalled Carbon Nanotubes on the Mechanical and Impact Performance of Unidirectional Kevlar/Epoxy Based Composites. IOP Conference Series: Materials Science and Engineering, 1248(1), 012084. <https://doi.org/10.1088/1757-899X/1248/1/012084>.
- M.N. Akhtar, Amal Lohchab, D. Singh, R.R. Kumar, Piyush Gaur, B.K. Yadav, Experimental studies on the effect of chromium plating on the mechanical properties of SAE 4140 steel, Materials Today: Proceedings, 2023, ISSN 2214-7853, <https://doi.org/10.1016/j.matpr.2022.09.527>.
- Unnati Parmar, Piyush Gaur, " Experimental Investigation of Mechanical and Thermal Performance of Graphene Reinforced GFRP Composites", Abstract and Paper Submitted to ICAMST, August 24, Abstract Accepted.

## **BOOK CHAPTER**

- Gaur, P., Muthukumar, C., & Parthasarathy, V. (2024). Friction and Wear Properties of Biocomposites for Dental, Orthopaedic, and Biomedical Applications. In Tribological Properties, Performance and Applications of Biocomposites (pp. 185–218). John Wiley & Sons, Ltd. <https://doi.org/10.1002/9783527838080.ch12>.

## **PATENTS FILED/PUBLISHED/ACCEPTED**

- P. Vignesh, Piyush Gaur, J. Jabinath, L Chitra, “Ergonomic of child seat in electric tri-scooter” Patent Filed on 24/9/2021. Intellectual Property India. Patent no 354142-001. Patent Granted on 15/3/2023.
- Piyush Gaur, B. Prajwal, S. Barik, V Managuli, R Kumar, P. Ghosh, G Venkat Ramana, R. Dhanraj, G. Elatharasan, B. Venkata Ramarao, “Carbon fiber material based mechanical gripper for mini drone system”, Copyright Patent no: 202141053210. IPR Gov of India. Copyright published on 3/12/2021.
- Piyush Gaur, Ved Vyas Yadav, T. Senthil, V Managuli, Sagar Kavita Syed, S. Sharma, Ravi Ranjan Kumar, Dabir Singh, “Unified high-velocity shear and compression tester tool for soft materials”, Intellectual Property India. Design Patent no: 353542-001, Patent 23/12/2022. IPR Gov of India.
- T. Senthil Subramanyam, Piyush Gaur, “Multifunctional Smart Hand tool”, Intellectual Property India. Design Patent no: 353541-001, Patent Granted on 20/12/2022. IPR Gov of India.
- K Muthuchelian, A Thillaivanan, Piyush Gaur, P Debata, B Rajendra Prasad, P Ghosh, N Kumar, Bimal Pattanaik, Dhanoj, Dilip Kumar Baggal, “Design of Bioinspired Forest Chassis Robots on a Slope”. Design Patent Publication. Non-grant Patent Publication Filed on 30/10/21. Intellectual Property India. Copyright published.
- K Muthuchelian, Piyush Gaur, DB Rajendra Prasad, Sampath Velpua, P Yadav, T.G. Shakthivel, R Karthikeyan, Edwin Joseph, R Singh, Saran raj, “Concentrated solar thermal power plant with independently controllable subsets of heliostats”, Copyright no: 202141051437. Intellectual Property India. Copyright published on 30 Nov 2021.
- Sagar S, Nathan M, Jithin K, Shria A, Hetal N, Greesh V, Gaur P, “Dynamic Oxygen Supply oxygen machine based on fuzzy logic”, Design Patent Filed on, 24/12/2021. Design patent granted on 09/01/2023. IPR Gov of India.
- Sagar S, Nathan M, Jithin K, Shria A, Hetal N, Greesh V, Gaur P, “Dynamic oxygen supply and concentration machine based on fuzzy logic”, Design Patent Filed on, 24/12/2021. Design patent granted on 25/1/2022. IPR Gov of India.
- Vinayaka N, Piyush G, Vinayak Malik, Manikandan Ganesan, “A 3D printer with multi material capabilities”, Design Patent Filed on, 25/12/2021. Patent no: 355435-001. IPR Gov of India.
- Abhay Kaushik, Ashish Mishra, Piyush Gaur, “A Uniaxial shear testing fixture for composite materials”. Design patent applied on 1 May 2023.