Dr. BHARANI MURUGESAN

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Pa. Vellalapalayam Post, Gobichettipalayam,
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Professional Objective:

To pioneer advancements in fashion technology by integrating sustainable materials, smart textiles, and AI-driven innovations, leveraging over two decades of expertise in technical textiles, advanced material development, and machine learning applications. With a proven track record of patented innovations like the Fibre Friction Tester and groundbreaking research in flame-retardant textiles, antimicrobial fabrics, and nonwoven composites, I am dedicated to developing eco-conscious solutions, high-performance textiles, and cutting-edge manufacturing techniques. Committed to establishing a benchmark center of excellence in fashion and textile innovation, fostering global collaborations, and aligning with industry and sustainability goals to shape the future of fashion education and technology.

Academic Credentials with Research Highlights

- **Postgraduate Certificate (QIP) in Machine Learning**
  Indian Institute of Information Technology, Surat – 2025
  Specialized in Machine Learning algorithms, data analysis, and AI-driven solutions for technical and industrial applications.
- **Doctorate (Ph.D.) in Textile Technology**
  Anna University – 2015
  Research Title: *Certain Investigations in Engineering and Characterization of High-Performance Protective Textiles*
  - Conducted extensive studies on the structural and mechanical properties of protective textiles.
  - Developed advanced methodologies for enhancing durability and performance in high-stress environments.
  - Contributed to the field of technical textiles with a focus on safety and functional efficiency.
- **Master of Technology (M.Tech.) in Textile Technology**
  Bannari Amman Institute of Technology, Sathyamangalam / Anna University – 2005
  Thesis Title: *Tensile Behaviour of Ring, Rotor, Air-Jet, and DREF-3 Friction Yarns*
  - Investigated the tensile properties and mechanical performance of different yarn types under varied conditions.
  - Provided comparative analysis to improve yarn selection for specific industrial applications.
  - Offered insights into the manufacturing and application potential of advanced yarn technologies.
- **Master of Science (M.S.) in Information Technology**
  Bharathidasan University (Distance Education) – 2002
  *Focused on IT systems integration, software development, and digital inno*vation.

- **Bachelor of Technology (B.Tech.) in Textile Technology**
  Bannari Amman Institute of Technology, Sathyamangalam / Bharathiar University – 2000
  Built a strong foundation in textile science, engineering, and industrial practices.
- **Postgraduate Diploma in Management Information Technology (PGDMIT)**
  Institute for Management Studies, New Delhi – 2002
  Specialized in IT-driven management strategies and leadership.
- **Diploma in Export Management (DEM)**
  National Institute of Export Management, Chennai – 2001
  Focused on global trade, export operations, and international logistics.

Professional Experience

February 2022 – June 2025
K.S. Rangasamy College of Technology, Tiruchengode
Associate Professor

- Spearheading research initiatives in sustainable textiles and advanced materials.
- Delivering lectures in Textile Technology, focusing on practical applications and industry trends.
- Mentoring undergraduate and postgraduate students for academic excellence and career readiness.
- Leading departmental projects aligned with Sustainable Development Goals (SDGs).

November 2016 – February 2022
Kombolcha Institute of Technology, Wollo University, Kombolcha, Ethiopia
Associate Professor

- Developed and modernized curricula to meet international standards in textile education.
- Conducted cutting-edge research in textile engineering, securing funding for key projects.
- Collaborated with local industries to foster innovation and community development.
- Mentored faculty members and students, achieving notable academic outcomes.

June 2005 – October 2016
Bannari Amman Institute of Technology, Sathyamangalam, Tamil Nadu
Assistant Professor (Selection Grade)

- Enhanced academic quality by incorporating practical training and industry collaboration.
- Published impactful research papers in peer-reviewed journals on advanced textile materials.
- Played a pivotal role in establishing state-of-the-art laboratories for textile technology.
- Organized workshops and conferences to bridge the gap between academia and industry.

August 2001 – October 2003
Bharathidasan College of Arts and Science, Erode, Tamil Nadu
Assistant Professor

- Delivered foundational courses in textile technology to undergraduate students.
- Introduced innovative teaching methods to improve student engagement and learning outcomes.

- Contributed to curriculum development to meet emerging industry demands.

May 2000 – April 2001
K.P.R. Mills Pvt Ltd, Sathyamangalam, Tamil Nadu
Junior Production Officer

- Supervised daily production operations, ensuring quality control and efficiency in textile manufacturing.
- Implemented process improvements that enhanced productivity and reduced waste.
- Gained valuable insights into large-scale production techniques and machinery operations.

R&D Projects, Conferences, and Student Projects

1. Ongoing Projects

- **EMPOWER TEX – WEDP**
  - **Sponsoring Agent:** DST, New Delhi
  - **Amount:** ₹4,50,000
  - **Focus:** Empowering women in textile entrepreneurship through capacity-building initiatives.
  - **Status:** Ongoing
- **AI-Assisted Robotic Arm Based Pot Shaping Machine for Enhanced Craftsmanship**
  - **Sponsoring Agent:** MSME, New Delhi
  - **Amount:** ₹14.75 Lakhs
  - **Focus:** Development on Robotic arm for PoT Shaping
  - **Status:** Completed

2. International Collaborations

- **Design and Development of Thermoregulating Garments**
  - **Sponsoring Agent:** Wollo University, Ethiopia R&D Department
  - **Amount:** 193,848 ETB
  - **Focus:** Creating garments with advanced thermal regulation capabilities for diverse climatic conditions.
  - **Status:** --
- **Design and Development of Computer-Aided Fibre Friction Tester (2017–18)**
  - **Sponsoring Agent:** Wollo University, Ethiopia R&D Department
  - **Amount:** 85,500 ETB
  - **Focus:** Developing a novel device for fiber friction measurement; patented for innovative design.
  - **Status:** Completed and Patented

3. Defense and High-Performance Textiles

- **Engineering and High-Performance Protective Textiles (2005–2008)**
  - **Sponsoring Agent:** DRDO, New Delhi
  - **Amount:** ₹14.42 Lakhs
  - **Focus:** Advanced protective textiles for defense applications, improving safety and durability.
  - **Status:** Completed

4. Apparel and Process Innovations

- **Innovations in Apparel Manufacture, Quality, and Management (IAQM) (2013–14)**
  - **Sponsoring Agent:** AICTE, New Delhi
  - **Amount:** ₹1.50 Lakhs

- **Focus:** Enhancing apparel manufacturing processes, quality management, and productivity.
- **Status:** Completed

5. Sustainable and Functional Textile Projects (TNSCST-Funded)

- **Development of Self-Cleaning Garments Using Nanoparticles (2011–12)**
  - **Amount:** ₹10000
  - **Focus:** Exploring nanoparticles for self-cleaning properties in textiles, reducing maintenance needs.
  - **Status:** Completed
- **Thermal Control of Automotive Interiors Using PCMs (2011–12)**
  - **Amount:** ₹10000
  - **Focus:** Utilizing phase change materials (PCMs) for heat regulation in automotive textiles.
  - **Status:** Completed
- **Development of Thermoregulating Garments (2010–11)**
  - **Amount:** ₹10000
  - **Focus:** Creating garments with adaptive thermal regulation for enhanced comfort.
  - **Status:** Completed
- **Development of Mosquito Repellent Garments (2013–14)**
  - **Amount:** ₹10000
  - **Focus:** Designing garments treated with mosquito-repellent agents for improved functionality.
  - **Status:** Completed

Publications:

1. **Bharani, M., &** Mahendra Gowda, R.V. (2012). Characterization of Flammability and Low stress, Mechanical Properties (Compression and Shear) of Basofil fibers and its blends. Chemical Science Review and Letters, 1(1), 35-44.
2. **Bharani, M.,** Mahendra Gowda, R.V., Rajashree, S., & Sarumathy, K.K. (2012). Characterization of Sewability Parameters of Plain Structured Fabric with Structurally Modified Trevira CS Yarn for Defence Application. Chemical Science Review and Letters, 1(1), 53-61.
3. **Bharani, M.,** & Mahendra Gowda, R.V. (2012). A study on tensile behavior of Ring, Rotor, Airjet, and DREF -3 Friction Yarns at Different Gauge Lengths. International Journal of Scientific and Research Publications, 2(9).
4. **Bharani, M.,** & Mahendra Gowda, R.V. (2012). A study on Effect of Strain Rate on Tensile Behaviour of Inherent Flame Retardant Trevira CS Airjet Spun Yarn. Journal of Textile Science & Engineering, 2(5). http://dx.doi.org/10.4172/2165-8064.1000118
5. **Bharani, M.,** & Mahendra Gowda, R.V. (2013). Tensile Behavior of Ring, Rotor, Air-jet, and DREF-3 Friction spun yarns at different gauge lengths. Journal of Textile and Apparel, Technology and Management, 8(2), Summer.
6. **Bharani Murugesan. (2013**). Analysis on Sewing Performance of Ring, Rotor, Airjet, and DREF-3 Friction Spun Yarn Fabrics. Journal of Scientific And Industrial Research, 73(8), 521-424.
7. **Bharani, M. (2016).** Influence of Specimen Length And Extension Rate on Tensile Behaviour of Spun Yarns. International Journal of Recent Scientific Research, 7(3), 9612-9619**.**

8. **Bharani, M.,** Pavithra, M.K.S., & Mahendra Gowda, R.V. (2016). Development of Antimicrobial Finished Flame-Retardant Textiles Materials. International Journal of Advanced Engineering Technology, VII(I), 142-148.
9. **Bharani, M. (2016).** Analysis and Characterisation of Mosquito Repellent Textiles. Journal of Textile Science & Engineering, 7(5), DOI: 10.4172/2165-8064.1000317.
10. Sakthivel, S., **Bharani, M.,** Temesgen, S., Atalie, D., & Ashagre, G. (2017). Recycling of cotton and polyester fibers to produce nonwoven fabric for functional sound absorption material. Journal of Natural Fibers. DOI: 10.1080/15440478.2017.1418472.
11. **Bharani Murugesan. (2018).** Analysis on Production Efficiency of Lean Implemented Sewing Line: A Case Study. Journal of Textile Science and Engineering, 8(6), 386. DOI: 10.4172/2165-8064.1000386**.**
12. Temesgen, S., **Murugesan, B.,** & Gideon, R.K. (2019). Performance Evaluation of Cotton Yarn Sized With Natural Starches Produced From Native Corn, Cassava and Potato Starches. Journal of Textile Science and Engineering, 9(1), 389. DOI: 10.4172/2165-8064.1000389.
13. Sakthisudhan, K., **Murugesan, B.,** Saravanan, V., Sailaja, P.N.S. (2020). Textile E.F. shaped antenna based on reinforced epoxy for breast cancer detection by composite materials. Materials Today: Proceedings. https://doi.org/10.1016/j.matpr.2020.10.465.
14. SankarGanesh, S., Sreelatha, P., Bhanu Rekha, V., Puttumraju, A.K., **Murugesan, B.,** Sakthisudhan, K. (2021). Textile antennas for breast carcinoma diagnosis application. Materials Today: Proceedings. https://doi.org/10.1016/j.matpr.2020.12.221.
15. Amirthalakshmi, T.M., Subitha, D., Santhosh, A.J., Pattanaik, **B., Murugesan, B.,** Sakthisudhan, K. (2021). Breast carcinoma analysis by broadband antennas with composite test-beds. Materials Today: Proceedings. https://doi.org/10.1016/j.matpr.2020.12.250.
16. Sakthisudhan, K., **Murugesan, B.,** Elanangai, V., Karthik, C., Sireesha, V.N. (2021). Dual-band transceiver of 1x2 grid pattern printed on woven fabric cancer detection by composites. Materials Today: Proceedings. https://doi.org/10.1016/j.matpr.2020.11.807.
17. **Murugesan, B.,** Dessie, A., Eshetu, B. (2020). Analysis On Colour Strength And Fastness Behaviour Of Senna Alata Dye Extract Treated Cotton Fabrics. Solid State Technology, 63(6). Archives Available @ www.solidstatetechnology.us.
18. Kilavan Packiam, K**., Murugesan, B.,** Mettupalayam, P., Sundaramoorthy, K., Srinivasan, H., & Dhanasekaran, K. (2021). Extraction, Purification and Characterization of Nanocrystalline Cellulose from Eichhorniacrassipes (Mart.) Solms: A Common Aquatic Weed Water Hyacinth. Journal of Natural Fibers. DOI:10.1080/15440478.2021.1946886.
19. Yoganandam, K., Shanmugam, V., Vasudevan, A., Vinodh, D., Nagaprasad, N., Stalin, B., Karthick, A., Malla, C., **Murugesan, B. (2021).** Investigation of Dynamic, Mechanical, and Thermal Properties of Calotropis Procera Particle-Reinforced P.L.A. Biocomposites. Advances in Materials Science and Engineering, 2021, Article ID 2491489. https://doi.org/10.1155/2021/2491489.
20. Dharmaraj, R., Karthick, A., Arunvivek, G.K., Gopikumar, S., Mohanavel, V., Ravichandran, M., **Murugesan, B. (2021).** Novel Approach to Handling Microfiber-

Rich Dye Effluent for Sustainable Water Conservation. Advances in Civil Engineering, 2021, Article ID 1323472. https://doi.org/10.1155/2021/1323472.

21. Muthuraman, U., Shankar, R., Nassa, V.K., Karthick, A., Malla, C., Kumar, A., Manoj Kumar, P., Rahim, R., **Murugesan, B. (2021).** Energy and Economic Analysis of Curved, Straight, and Spiral Flow Flat-Plate Solar Water Collector. International Journal of Photoenergy, 2021, Article ID 5547274. https://doi.org/10.1155/2021/5547274.
22. Kavimani, V., Stalin, B., Gopal, P.M., Ravichandran, M., Karthick, A., **Murugesan, B. (2021).** Application of r-GO-MMT Hybrid Nanofillers for Improving Strength and Flame Retardancy of Epoxy/Glass Fibre Composites. Advances in Polymer Technology, 2021, Article ID 6627743. https://doi.org/10.1155/2021/6627743.
23. Sezhian, M.V., Giridharan, K., Pushpanathan, D.P., Chakravarthi, G., Stalin, B., Karthick, A., Manoj Kumar, P., **Murugesan, B. (2021**). Microstructural and Mechanical Behaviors of Friction Stir Welded Dissimilar AA6082-AA7075 Joints. Advances in Materials Science and Engineering, 2021, Article ID 4113895. https://doi.org/10.1155/2021/4113895.
24. Stalin, B., Ravichandran, M., Karthick, A., Meignanamoorthy, M., Sudha, G.T., Karunakaran, S., **Murugesan, B. (2021).** Investigations on Microstructure, Mechanical, Thermal, and Tribological Behavior of Cu-MWCNT Composites Processed by Powder Metallurgy. Journal of Nanomaterials, 2021, Article ID 3913601. https://doi.org/10.1155/2021/3913601.
25. N. Saravanan , V. Yamunadevi, V. Mohanavel , V. Kumar Chinnaiyan**, Murugesan Bharani ,** P. Ganeshan , K. Raja and Alagar Karthick, Effects of the Interfacial Bonding Behavior on the Mechanical Properties of E-Glass Fiber/Nanographite Reinforced Hybrid Composites, Advances in Polymer Technology Volume 2021, Article ID 6651896, 9 pages https://doi.org/10.1155/2021/6651896.
26. V. Kavimani , P. M. Gopal , B. Stalin , Alagar Karthick , S. Arivukkarasan, and **Murugesan Bharani,** Effect of Graphene Oxide-Boron Nitride-Based Dual Fillers on Mechanical Behavior of Epoxy/Glass Fiber Composites, Journal of Nanomaterials Volume 2021, Article ID 5047641, 10 pages https://doi.org/10.1155/2021/5047641
27. **Bharani Murugesan,** Asaye Dessie Wolela, RV Mahendra Gowda,'Investigation on flammability and washing durability of Trevira CS, and its blends with Cotton, Modal, And Acrylic Fabrics, Journal of Chemistry, Volume 2023, 11 Pages, https://doi.org/10.1155/2023/1619577
28. **Bharani, M.,** Gowda, R.V.M. & Prakash, C. Bending and Shear Property of Fabrics Produced from Trevira CS and Its Blends. *Fibers Polym* 25, 1111–1126 (2024). https://doi.org/10.1007/s12221-024-00499-3
29. **Bharani Murugesan,** Saravanakumar S, Keerthivasan V**,** "Exploring the composition, structure, and Mechanical behaviour of glass fibre reinforced polymer (GFRP) composites," *Textile Trends*, Vol. LXVI, No. 05, August 2023, pp. 38–43.
30. Saravanakumar S, Keerthivasan V**, Bharani Murugesan**, "Glass Fabric Reinforced Composite and Its Application – A Review," *Asian Technical Textile*, Vol. 17, No. 2, April–June 2023.

31. G Killivalavan, Madhankumar, **Bharani Murugesan**, "A critical review on the Conductive Properties of Polypyrrole and Polyaniline Filaments and the Method to Obtain Conductivity in Polyaniline," *Asian Textile Journal*, Vol. 32, No. 5, May 2023.
32. Barathkumar S, Sabari Sree Aravind R, Padmalatha D, **Bharani Murugesan**, "A Review on Electromagnetic Radiation Shielding Clothing Using Metal Filaments and Textile Materials," *Asian Textile Journal*, Vol. 32, No. 5, May 2023.
33. R. Yogesh, P. Santhosh, R. Rajkumar, **Bharani Murugesan**, "A Review of Textile Preforms, depending upon Structures in Composites," *Asian Textile Journal*, March–April 2023, pp. 25–34.
34. T. Abinesh, K. Vijayakumar, M.B. Sampath, **Bharani Murugesan**, "Influence of Plasma Treatment on Comfort Properties of Regenerated Bamboo Knitted Fabric," *Asian Textile Journal*, February 2023.
35. **Bharani M,** Shiyamaladevi P.S.S., Mahendra Gowda R.V.**,** "Characterization of Seam Strength and Seam Slippage on Cotton Fabric with Woven Structure and Finish," *Textile Trends*, Vol. 9, 2012, pp. 35–43. *(Scopus)*
36. **Bharani M,** Shiyamaladevi P.S.S., Mahendra Gowda R.V.**,** "Characterization of Seam Strength and Seam Slippage on Cotton Fabric with Woven Structure and Finish," *Research Journal of Engineering Sciences*, Vol. 1, No. 2, 2012, pp. 41–50.
37. **Bharani M,** Mahendra Gowda R.V.**,** "Characterization of Seam Strength and Seam Slippage on P.C. Blend Fabric with Woven Structure and Finish," *Research Journal of Recent Sciences*, Vol. 1, No. 12, 2012, pp. 7–14.
38. **Bharani M,** Abaya S, Nithya S, Manikandan M, Nixsha Mafer D.**,** "Characterization of Self-Cleaning Behavior of Inherent Flame Retardant Materials," *TechnicalTextile.net*, 2012. *(Open Access)*
39. **Bharani M.,** Mohanraj S.**, "**Fabric Evaluation Process to Ensure the Quality of the Garment," *The Textile Magazine*, Vol. 40, Issue No. 5, March 2008, pp. 72–84.
40. **Bharani M**., Mohanraj S., Mahendra Gowda R.V.**,** "Role of a Sewing Needle in Sewing Performance – A Critical Review," *IJEST*, Vol. 2, No. 1, Jan–Jun 2008, pp. 65–74.
41. **Bharani M.,** Timble N.B.**, "**Melt Blown Nonwoven: An Overview," *Asian Textile Journal*, Vol. 14, No. 6, June 2005, pp. 48–54.
42. **Bharani M.,** Sivakumar M., "Process and Treatments Involved in Fabric Finishing for Value Addition," *Textile Magazine*, Vol. 46, June 2005, pp. 66–69.
43. **Bharani M.,** Sivakumar K.**, "**All About Metal Fibre Technology," *Textile Magazine*, May 2005, pp. 30–32.

Conference Presentations

1. **Bharani, M, Gowthami, D, Subanandhini, V, Durga Priyanka, G & Sriramulu, V** (2011). *Characterization of flammability and Low-Stress Mechanical Properties (compression and shear) of Basofil and its Blends.* Presented at the International Conference on Asian Textile Conference, Seoul, South Korea, pp. 109.
2. **Bharani, M, Mohanraj, S & Sriramulu, V** (2011). *Study on Seam Performance of Woven Fabrics.* Presented at the International Conference on Asian Textile Conference, Seoul, South Korea, pp. 100.
3. **Bharani, M & Mahendra Gowda, R.V.** (2011). *Investigation on Tensile and Flammability Behaviour of Basofil Fibres and its Blends.* Presented at the International Conference on Advances in Textiles, Machinery, Nonwovens, and Technical Textiles, Kumaraguru College of Technology, Coimbatore, and Texas Tech University, USA, pp. 33.

4. **Bharani, M, Jinoo, J.K. & Sahithya, B** (2009). *Characterization of Flammability & Low-Stress Mechanical Properties (compression and shear) of Trevira CS and Its Blends.* Presented at the International Conference on Advances in Textiles, Machinery, Nonwovens, and Technical Textiles, Bannari Amman Institute of Technology, Sathyamangalam, and Texas Tech University, USA, pp. 29.
5. **Bharani, M, Ramya Priya, R, Karthiga, D & Shanmugapriya, S** (2009). *A Critical Investigation of Sewing Performance of Plain, Twill, Satin Fabrics Based on Seam Slippage and Seam Strength.* Presented at the International Conference on Advances in Textiles, Machinery, Nonwovens, and Technical Textiles, Bannari Amman Institute of Technology, Sathyamangalam, and Texas Tech University, USA, pp. 14–15.
6. **Bharani, M & Mahendra Gowda, R.V.** (2013). *Analysis of Seam Strength and Seam Slippage on Cotton Fabric with Woven Structures.* Presented at the National Conference on Innovations in Apparel Manufacture, Quality and Management, Bannari Amman Institute of Technology, Sathyamangalam, October 22–23, 2013, pp. 101–113.
7. **Bharani, M** (2017). *Engineering and Characterization of Sewing Performance of Fabric Produced from Trevira CS Spun Yarns.* Presented at The 1st National Research Conference on Science, Technology, and Innovation for Sustainable Development (STISD-2017), Kombolcha Institute of Technology, Wollo University, July 1–2, 2017.
8. **Bharani, M** (2017). *Characterisation of Antimicrobial Finished Flame Retardant Textile Materials.* Presented at the 5th International Conference on the Advancement of Science and Technology, Bahirdar Institute of Technology, Bahirdar University, May 19–20, 2017.
9. **Mahlet Ayele, Bharani M., Bhanu Rekha.** (2020). *Analysis of Air Permeability and Absorption Behavior of Diaper Insert Produced from Hemp and Viscose Rayon Fiber Blend.* Presented at the International Conference on Integration of Advanced Technologies for Industry 4.0 (ICIATI-2020), K.C.G. College of Technology, Chennai, India, June 12–13, 2020.
10. **Yogesh R, Rajkumar R, Bharani Murugesan** (2023). *Designing and Fabrication of Bio-Composites for Automobile Application.* Presented at *Sustainable Textiles, Fashion, and Craft (STFC2K23)*, Bannari Amman Institute of Technology, Sathy, April 2023.
11. **Saravanakumar S, Keerthivasan V, Bharani Murugesan** (2023). *Development of Flame Retardant Knitted and Woven Glass Core Yarn Fabrics.* Presented at *Sustainable Textiles, Fashion, and Craft (STFC2K23)*, Bannari Amman Institute of Technology, Sathy, April 2023.
12. **Santhosh P, Bharani Murugesan** (2023). *Development and Characteristics of Ladder Effect Saree by Using Miss Pick Effect.* Presented at *Sustainable Textiles, Fashion, and Craft (STFC2K23)*, Bannari Amman Institute of Technology, Sathy, April 2023.

Seminars/Staff Development Programs

1. **Bharani, M** (2015). *Self-Cleaning Textile Materials.* Presented in the AICTE Sponsored Staff Development Program (SDP) on "Technical Textiles and Garments," May 18–30, 2015.
2. **Bharani, M** (2012). *3D Body Scanning.* Presented in the AICTE Sponsored Staff Development Program (SDP) on "Modern Garment Technology," Bannari Amman Institute of Technology, Sathyamangalam, May 21–June 2, 2012.
3. **Bharani, M** (2016). *Antimicrobial Finished Flame Retardant Materials.* Presented at the "All India Seminar on Latest Developments in Technical Textiles and Marketing of

Technical Textiles and Apparels," Bannari Amman Institute of Technology, Sathyamangalam, June 22–23, 2016.

Edited Book Chapter and Proceedings

1. **Bharani, M** (2015). *Proceedings of the AICTE Sponsored FDP Program on "Technical Textiles and Garments,"* Bannari Amman Institute of Technology, Sathyamangalam. ISBN: 978-81-920460-7-5.
2. **Bharani, M** (2013). *Proceedings of the AICTE Sponsored National Conference "Innovations in Apparel Manufacture Quality and Management (IAQM 2013),"* Bannari Amman Institute of Technology, Sathyamangalam. ISBN: 978-93-83842-02-5.
3. **Bharani, M** (2017). Edited book: *"A Collective Study on Technical Textiles."* ISBN: 978-93-86176-88-2.
4. **Bharani, M** (2017). Edited book: *"Technology of Terry Weaving."* ISBN: 978-93-86638-18-2.
5. **Murugesan, B., Jayanthi, K.B., Karthikeyan, G.** (2024). *Integrating Digital Twins and 3D Technologies in Fashion: Advancing Sustainability and Consumer Engagement.* In *Illustrating Digital Innovations Towards Intelligent Fashion,* Springer, Cham. ISBN: 978-3-031-71052-0.

Research Projects

1. **Engineering of Flame-Retardant Textiles**
    - Successfully processed Trevira CS inherently flame-retardant fibers on spinning systems like Ring, Rotor, and Air-jet spinning to produce 20 Ne & 30 Ne yarns.
    - Blended Trevira CS with Acrylic (T/A: 50/50 & 80/20), Cotton (T/C: 80/20 & 50/50), and Modal (T/M: 80/20) to explore economic production of flame-retardant apparel.
2. **Development of Mosquito-Repellent Textiles**
    - Developed mosquito-repellent garments using cotton and Trevira knitted fabrics treated with natural eucalyptus oil and synthetic DEPA.
3. **Tensile Behavior of Ring, Rotor, Air-Jet, and DREF-3 Friction Yarns**
    - Investigated the strain-strain responses and failure modes of various yarns at high line rates and different gauge lengths, demonstrating improved yarn engineering techniques.
4. **Design and Development of Computer-Aided Fibre Friction Tester**
    - Designed and fabricated a novel device to measure friction in textile fiber assemblies and fabrics.
    - Examined the influence of normal load and test speed on fiber friction for materials like cotton, viscose, polyester, and acrylic.

Lectures Delivered

1. **Faculty Development Program (FDP)**
    - Resource Person on *"Technical Textiles and Garments"* (AICTE Sponsored), BIT, May 18–30, 2015.
2. **Entrepreneurship Development Program (EDP)**
    - Resource Person on *"Apparel Technology"* (DST-NIMAT Sponsored), BIT, Dec 3–31, 2012, and Feb 18–Mar 18, 2013.
3. **Staff Development Program (SDP)**

- Resource Person on *"Modern Garment Technology"* (AICTE Sponsored), BIT, May 21–June 2, 2012.
- Resource Person on *"Structure and Properties of Textile Fibers"* (AICTE Sponsored), BIT, July 6–18, 2009.

4. **National Seminar**
   - Resource Person on *"Plasma Processing of Textile Materials"* (AICTE Sponsored), BIT, Apr 22–23, 2010.
5. **External Examiner**
   - Acted as an External Examiner for various institutions in India.

Community Services and Department Activities

1. **Innovative Developments**
   - Developed solar-energized garments, textile keyboards, and solar-operated sewing machines.
2. **Rural Training Programs**
   - Conducted training programs on garment construction and entrepreneurial aspects for rural communities.
3. **Organized Events**
   - Organized seminars, conferences, workshops, and short-term courses.
   - Conducted a two-month training program on garment construction in Kombolcha (Mar 17–May 20, 2018).
4. **Advisory and Technical Support**
   - Freelance advice on minimizing fabric waste during cutting for Kidane Garments, Kombolcha.
   - Provided technical suggestions for embroidery machine service at Kombolcha Polytechnic College.
   - Trained industrial laborers at Your Garments, Tirupur.
5. **Donations and Sponsorships**
   - Donated **1200 ETB** to benefit needy students (2017–18).
   - Sponsored **41 original** and **52 reproduced** copies of textile engineering books for departmental use.
6. **Laboratory and Equipment Installation**
   - Installed testing equipment such as a Stelometer, single-yarn strength tester, and Perspirometer.
7. **Guest Lectures**
   - Arranged a guest lecture by JUKI Singapore on the latest garment machinery technology.

Holistic Modules

Prepared comprehensive modules for the **Textile and Fashion Designing Department**:

1. Fashion Designing
2. Yarn Manufacturing
3. Advanced Yarn Manufacturing

Journal Reviewer

Served as a reviewer for the following esteemed journals:

1. **Textile Research Journal**
2. **Journal of Industrial Textiles**
3. **Journal of Engineered Fibres and Fabrics**

Patents

1. **Australian Patent Granted**
    - **Title:** *Design and Fabrication of Fibre Friction Tester*
    - **Application Number:** 2020102824
    - **Principal Investigator:** Dr. Bharani Murugesan
    - **Co-Principal Investigators:**
        - Mr. Aron Mulat
        - Mr. Selam Temesgen
        - Dr. Melaku Tamene M
2. **Indian Patent Granted**
    - **Title:** *Textile Machine*
    - **Application Number:** 402185-001
    - **Inventors:**
        - Dr. Bharani Murugesan
        - Dr. D. Srividhya
        - Dr. R. Gopalakrishnan
        - Dr. G. Karthikeyan
3. **Indian Patent Published**

   Title: AI-Assisted Robotic Arm Based Pot Shaping Machine For Enhanced Craftsmanship

   Application : 202541002588 A

   Inventors:

   1)Dr.Bharani Murugesan
   2)Thulasimani V
   3)Saravanan E
   4)Harish D

4. **Indian Patent Published**

   Title: Integrating Pnipam Hydrogel With IOT Sensors For Real Time Monitoring And Enhanced Wound Healing

   Application : 202541002314 A

   Inventors:

   1)Dr.Bharani Murugesan
   2)Saravanan E
   3)Harish D
   4) Somasundaram N
5. **Indian Patent Published**

   Title: Development Of Fabrics And Bags Using Weaving Selvedge Waste

   Application : 202441094029 A

   Inventors:

   1) Harish D
   2) Saravanan E
   3) Dr.Bharani Murugesan
   4) Anandhakumar

6. **Programs Attend Indian Patent Published**
   Title: Development Of Shape Memory Ligerie For Back Posture Rectification
   Application : 202441093988 A
   Name of Inventor :
   1)Nikhil pravin M
   2)Pavithran R K
   3)Kiruthikraja K
   4)Dr. Bharani Murugesan
   5)Dr. G. Karthikeyan

1. **Orientation Program**
   - Acted as Resource Person on *"A Guide Line for Research Proposal and Research Dissertation Thesis"* at KIOT, March 22, 2019.
2. **Garment Machinery and Equipment Training**
   - Trained on "Garment Machinery and Equipment - including Maintenance Engineering" by Juki India, Tirupur.
3. **Workshops**
   - *Design of Experiments & Minitab 17: Statistical Software Tools* by Cubic Computing P Ltd., Bangalore & BIT, September 8, 2015.
   - *Research Methods and Tools for Engineering Faculty,* December 18–19, 2009, BIT.
4. **FDPs and Specialized Training**
   - Two-week AICTE-sponsored FDP on *"Fashion Design and Technology,"* May 20–June 2, 2013, BIT.
   - Personal Effectiveness Program (P.E.P.) by Prasanna Trust, Coimbatore, July 28–29, 2012, BIT.
   - Training on *"Computer-Aided Design"* for TUKAdesign, Tukagrade, and TUKAmark by Tukatech, Inc., June 14–20, 2010.
   - FDP on *Finite Element Analysis,* November 19–20, 2008, BIT.
5. **ABET Accreditation Workshop**
   - Conducted by Dr. K. Surendran, Southeast Missouri State University, July 21, 2012, BIT.

Awards

1. **Best Outgoing Student Award**
   - Awarded for M.Tech in Textile Technology by Bannari Amman Institute of Technology (Alagammal Charitable Trust), Sathyamangalam.
2. **2024 Bagathon Winner**
   - Received the award from TNPCB, Chennai.

Undergraduate Projects:

1. **Solar Energized Garments**
   - This project focuses on integrating solar panels into garments to power small devices, enabling sustainable energy use in wearable technology. The innovation addresses the growing demand for eco-friendly and functional clothing.
2. **Design and Development of Thermo-Regulating Garments**
   - Thermo-regulating garments are engineered to maintain body temperature in varying environmental conditions, ensuring comfort and performance. The project uses advanced materials and techniques to create adaptive textiles.
3. **Solar Operated Sewing Machine**

- This project explores the design and development of sewing machines powered by solar energy, reducing dependency on electricity and making garment production feasible in remote or off-grid areas.

4. **Design and Development of Garments for Blinds**
   - Aimed at inclusivity, these garments incorporate tactile features such as Braille labels and textured designs to assist visually impaired individuals in identifying and wearing clothing independently.
5. **Sewability Analysis of Different Structured Fabrics**
   - This study investigates the ease of sewing various fabric structures (woven, knitted, and nonwoven) by analyzing needle penetration, thread tension, and seam strength, providing insights for optimal material selection in garment production.
6. **Production Analysis of Lean-Implemented Sewing Section**
   - This project evaluates the application of lean principles in sewing sections to identify bottlenecks, reduce wastage, and improve overall efficiency, supporting sustainable manufacturing practices.
7. **Antimicrobial Behavior of Bamboo and Neem Activated Charcoal**
   - Natural antimicrobial agents from bamboo and neem are studied for their effectiveness in inhibiting bacterial growth, paving the way for health-focused and eco-friendly textiles.
8. **Extraction and Characterization of Natural Dye Using *Senna Alexandrina***
   - The project explores the extraction of dyes from *Senna Alexandrina*, a natural source, to replace synthetic dyes. It evaluates colorfastness, environmental impact, and application on different textiles.
9. **Design and Development of Wrap Spinning Machine**
   - This project involves creating a prototype for a wrap spinning machine that combines fibers into yarns efficiently. The innovation targets increased productivity and better yarn quality for niche markets.
10. **Characterization of Core-Spun Yarn Produced from Ring Spinning Machine**

- Core-spun yarns are studied for their structure, strength, and elasticity. The project evaluates their suitability for applications requiring durability, such as industrial textiles and performance apparel.

11. **Design and Development of Yarn Appearance Board Winder**

- This project designs equipment for winding yarns onto boards to visually inspect quality, enhancing yarn standardization and quality control during production.

12. **Characterization of Different Structured Woven Fabric for Stiffness, Drape, and Crease Recovery**

- The project evaluates woven fabrics with varying structures to determine their performance in stiffness, drape, and crease recovery, offering insights for applications in fashion and technical textiles.

Postgraduate Projects:

1. **Development and Characterizations of Nonwoven Fabrics Using Banana, Sisal, and Coir Fibers for Oil Absorbent Applications in Marine Engineering**
   - This project leverages natural fibers to create nonwoven fabrics with high oil absorption capacity. These fabrics are designed to combat oil spills in marine environments, combining environmental sustainability with functional effectiveness.

2. **Influence of Cylinder-Doffer Setting and Fiber Transfer Rate on N.E.P. Formation of Carding Machine**
    - The study optimizes carding machine parameters to minimize nep formation, enhancing yarn quality. The research demonstrates the impact of precise machine settings on fiber alignment and product uniformity.
3. **Preparation and Characterizations of Baby Diaper Inserts from Viscose Rayon and Hemp Fibers**
    - This project focuses on developing biodegradable and highly absorbent diaper inserts using viscose rayon and hemp. The research includes absorption rate tests, microbial resistance, and comfort evaluation.
4. **Design and Development of Flame-Retardant Textiles Using Eggshell, Borax, and Boric Acid**
    - By utilizing unconventional materials like eggshell and chemical additives, this project creates textiles with enhanced flame retardancy. The research highlights cost-effective, sustainable solutions for safety textiles.
5. **Development and Characterization of Water Hyacinth Reinforced Composites Using *Euphorbia Abyssinica* Gum**
    - Water hyacinth fibers are combined with natural adhesives like *Euphorbia Abyssinica* gum to produce lightweight, durable composites. The project explores applications in automotive, construction, and packaging industries.
6. **Tensile Behavior of Ring, Rotor, Air-Jet, and DREF-3 Friction Yarns**
    - The project investigates the tensile performance and failure mechanisms of yarns produced by different spinning systems. It provides valuable data to optimize yarn engineering for specific industrial uses.

Dr Bharani Murugesan