TAMILAZHAGAN P

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SUMMARY

A competent **Post-graduate Researcher in Polymer Science & Engineering** with **11+ months of experience** in **research & analysis**. Demonstrated expertise in formulating plastics, rubbers, coatings, biopolymer membranes, adhesives, and corrosion-resistant antimicrobial paints. Developed innovative & sustainable **Biopolymer & Biocomposite products**. Skilled at **compounding moulding and characterization of polymers.**

SKILLS & EXPERTISE

Polymer Compounding| Polymer Characterization | Synthetic & natural Polymers | Biopolymer synthesis | Biocomposites | Polypeptide Structures | Coatings | Membrane Technology | Adhesives | Rubber Technology| 3D Printing| Polymer Recycling | Design software - Solid Works, AutoCAD, Creo, Fusion 360 | MS-Office

EDUCATION

College of Engineering Guindy, Anna University, Chennai, India
M.Tech in Polymer Science & Engineering, 2021, 8.73/10

Madras Institute of Technology, Anna University, Chennai, India
B.Tech in Rubber and Plastics Technology, 2018, 6.3/10

RESEARCH EXPERIENCE

TITAN COMPANY LIMITED, CHENNAI, INDIA

Research Associate (Full Time) | Biopolymer and Biocomposites, Oct 2021 – Present

- Research and analysis of polymers include polyesters (PLA, PCL, PBAT, and PEG), cellulose, polyolefin(PP), polyamide(PA6,PA11), bioepoxy resin, natural fibres(Hemp,flax,bamboo,banana,palm,pineapple) and spent coffee ground.Processing polymer materials in extrusion, injection and compression moulding techniques
- Polymer characterization using FT-IR, TGA, DSC, SEM, EDAX, DMA & Mechanical Tests
- Developing Biocomposites and Biopolymer Eyewear from natural fiber and polymer blends for the mass-scale market application.
- Formulating, prototyping & assessing product properties & characteristics to meet industrial functionality standards.
- Analyzing study results to rectify errors and inconsistencies, preparing reports & presentations for management consumption.
- Translating client requirements into new product development in coordination with multi-functional teams.

Research Intern (Full Time) |Biopolymer and Biocomposites, Apr 2021– Oct 2021

- Managed end-to-end technical functions from formulation to product development of Biopolymer and Biocomposites.
- Handled raw material supply from various vendors & reduced compound cost by 5%.
- Conducted polymer characterization using FT-IR, TGA, DSC, SEM, EDAX, DMA & Mechanical Tests
- Performed secondary research, identifying & communicating with the key market players within the specified industry.
- Collected, documented & analyzed market data to deliver insights for projects as per client requirements.
- Quantified & analyzed the impacts of market drivers, limitations & challenges using mathematical & statistical functions.

PROJECTS

INDUSTRY PROJECTS

- **Development of Thermoplastic and Thermosetting Biocomposites for Wearable Application**
  TITAN COMPANY LIMITED, CHENNAI, India, Oct 2021
  Successfully developed natural fiber-reinforced (Hemp, flax, banana, palm, bamboo) bio-based epoxy and bio-based thermoplastic (PLA, PBS, PCL, PBAT) composites to develop sustainable wearable products for the mass-scale application.
- **Development of Spent coffee Ground Reinforced Biopolymer for Wearable Application**
  TITAN COMPANY LIMITED, Chennai, India, Oct 2021
  Successfully developed spent coffee ground-based biopolymer material to develop the first of its kind in India, sustainable & biodegradable eyewear products.
- **Development of Functionalized Super tough Biopolymer blends for eyewear application**
  TITAN COMPANY LIMITED, Chennai, India, Oct 2021
  Successfully developed and tested out the (PLA, PCL, and PBAT) blends suitable for sustainable & biodegradable eyewear products.

- **Recycling and property enhancement of polycarbonate lenses for a circular product economy.**
  TITAN COMAPANY LIMITED, Chennai, India, Jan 2022
  Successfully recycled the PC lenses and improved the property by appropriate blending for a circular product economy.

ACADEMIC PROJECTS

- **Development of PLA Blended Membranes for the Recovery of Bioactive Materials**
  Anna University, Chennai, India, Feb 2021
  Selected & formulated solution to the brittleness of Bio-Based Polymer Membrane and studied the toughness & stability for the membrane produced.
- **Development of Waterborne Epoxy-Schiff Base Coating for Anti- Microbial Prevention**
  Anna University, Chennai, India, Oct 2020
  Developed waterborne epoxy dispersed with Schiff base for anti-corrosive and antimicrobial prevention. Brush coated the waterborne epoxy filled with Schiff base on mild steel & studied the surface analytical test results.
- **Development of Waterborne Epoxy-CNT Nano Hybrid Coating for Corrosion Prevention**
  Anna University, Chennai, India, Oct 2020
  Developed the waterborne epoxy dispersed with CNT as an environment-friendly method of corrosion prevention. Compared the results of the surface analytical test after spray and brush coating of mild steel with conventional epoxy and the new waterborne epoxy filled with CNT.
- **Study on Layer Build Up from Curing of Epoxy Incorporated with Silica Filler Using UV Light**
  Anna University, Chennai, India, Mar 2018
  Built a filled epoxy sheet partially curing thin layers of nano and precipitated silica-filled epoxy resin. Studied the curing time achieved with commercial grade epoxy filled with nano-silica and precipitated silica.

TRAINING & CERTIFICATIONS

- In-plant industrial training on Rubber compounding and tyre manufacturing at JK tyres, Mysore, India, May (2 weeks), 2017.
- In-plant industrial training on Plastic compounding & moulding at Arun Plasto Molders, Chennai, India, Aug (1 week),2016.
- Latex and Rubber technology training at Rubber Board, Kottayam, Kerala, India, June 2016.
- Gained Industrial Exposure on Rubber technology at Industrial Rubber Products, Alfa rubber and Spring Pvt Ltd & St. Mary's Rubbers Pvt Ltd.
- Learned about Composite fabrication and testing in the Summer Internship at Menu Glass fibers Pvt Ltd, Oct 2020.
- Participated in the 3D Printing of Biopolymer and the Rubber, Plastic Molding workshops, Nov 2020.
- Certified in Master Design for Plastic Manufacturing from LinkedIn, Aug 2021.
- Administrative Foundations Certification from LinkedIn, Aug 2021.
- Marketing Coordinator Certification from LinkedIn, Sep 2021.

VOLUNTARY & EXTRACURRICULAR ACTIVITIES

- Volunteered for the National Sports Organization & YRC (Youth Red cross) activities, which included social work at the Madras Institute of Technology.
- Ranked 5th in Wordsworth Spelling Bee District-wise competition.
- Qualified GATE in 2020 with a rank of 1028.
- Won laurels in the Badminton zonal 2018 competition.
- Represented Madras Institute of Technology as a Captain of the Badminton team.

LANGUAGE AND INTERESTS

- English - Full Proficiency | Tamil - Native Proficiency | German - Beginner
- Badminton, Cricket, Reading

DECLARATION

I hereby declare that above particulars of information and facts stated are true, correct and complete to the best of my knowledge and belief.

Tamilazhagan P