Dr. Mugdha Dongre
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PROFESSIONAL PROFILE

• Assistant Professor with 10+ years of teaching experience.

• Possess comprehensive knowledge of 3D Printing technology along with Python, MATLAB, Minitab, Origin Lab, Microsoft Word, Excel, and PowerPoint.

• Comprehensive knowledge of various advanced Machine Learning algorithms.

• Guided 40+ UG students in the research domain.

• Worked as NAAC and NBA coordinator.

• Adept at interdepartmental coordination and communication.

PROFESSIONAL EXPERIENCE

1. Veermata Jijabai Technological Institute (VJTI), Mumbai (Aug 2023 – Present)

Assistant Professor-Tenure (Production Engineering Department)

Key Deliverables:

✓ Teaching Engineering Materials, Composites, Production Management to UG/PG students.

✓ Assistant Rector for VJTI Girls hostel.

✓ Conducted a one day training program “Advances in Composites” for UG/PG and Doctoral students.

2. Saraswati College of Engineering, Kharghar (Jan 2015 – July 2023)

Assistant Professor, (Mechanical Department) (UGC approved)

Key Deliverables:

✓ Taught Metrology, Production Processes, Metal Forming Technology, Machining Science to UG students.

✓ Academic Coordinator

✓ NAAC and NBA coordinator

✓ Entrepreneurship Development cell Coordinator

RESEARCH PROFILE

Research Area: Fiber reinforced Composites, Additive manufacturing, Material Characterization, Nanocellulose extraction, Multi-objective optimization, Machine learning

Experimental Investigation and Multiobjective optimization in abrasive waterjet machining by coupled Fuzzy-AHP and Fuzzy-TOPSIS, IJCMSSE, 2023 DOI:10.1504/IJCMSSE.2024.139013

-Multi-objective optimization in abrasive waterjet machining (AWJ) cutting of Ti6Al4V.

-The Taguchi L32 orthogonal array is used as an experimental design with pressure, abrasive flow rate, standoff distance, traverse rate, and abrasive size as control factors and depth of cut (DOC), kerf taper ratio (KTR), kerf width, material removal rate (MRR), and depth of smooth cutting zone as responses.

-The fuzzy-analytic hierarchy process (AHP) is used for weight calculation of responses, which is used by fuzzy-TOPSIS for combining all the responses into a single value.

-The optimal parameters from this work are as follows: Pressure (200 MPa), standoff distance (1 mm), abrasive flow rate (750 g/min), traverse rate (200 mm/min), and abrasive size (120#)

-The optimal parameters gave an improvement of 534 mm3/min in MRR, 1.38 mm in kerf width, 1.04 in KTR, 5.4 mm in the depth of the smooth zone, and 9.2 mm in the depth of the cut.

3D printed cellulose nanofiber-PLA nanocomposites: Experimental investigations and multi-objective optimization, IJMATEI, 2023, DOI: 10.1504/IJMATEI.2023.10056989

-This work focuses on experimental analysis and multi-objective optimisation of FFF printing parameters and different CNF concentrations for PLA-CNF nanocomposites.

-The effects of layer thickness, raster angle, and CNF concentration on tensile strength, elastic modulus, toughness, and warpage are analyzed.

-Based on confirmation test, this technique gave 10% increment in multi attribute performance index (MAPI) which is the combined effect of all the three responses.

Preparation and Characterization of 3D Printed Bio-composites containing Carica Papaya Cellulose Nanofibers, IJMATEI 2023, DOI: 10.1504/IJMATEI.2023.10058893

-Cellulose nanofibres (CNFs) were extracted from Carica papaya petioles using chemo-mechanical treatment.

-The morphological studies confirmed the nanofibre dimensions in the range of 10-60nm.

-The fused filament fabrication method was used to prepare 1% CNF/PLA composite filaments and tensile & flexural specimens were printed using additive manufacturing method..

-Improvement in tensile strength (10.8%) and flexural strength (21.9%) obtained with addition of 1% CNF reinforcement in PLA composites.

Analysis of cellulose based nanocomposites & potential applications, Materials Today Proceedings, 45(2), 2021, DOI: 10.1016/j.matpr.2020.12.943

-This review outlines the various chemo-mechanical methods used for extraction of cellulose and for isolation of nanocellulose.

-The different methods used for fabrication of cellulose nanocomposites are discussed in detail.

-The potential applications of nanocellulose composites different industries such as food and packaging, structural, bio- medical and electronics

Multi Objective Optimization in CNC End Milling of Inconel 718 Super Alloy by Taguchi-Grey-Fuzzy Method, International Conference on Nascent Technologies in Engineering (ICNTE), 2019,

DOI: 10.1109/ICNTE44896.2019.8945898.

-Maximization of productivity and minimization of roughness simultaneously by Taguchi-Grey-Fuzzy logic in cutting of Inconel 718 by end milling operation.

-L18 orthogonal array was utilized as design of experiment with 3 levels of depth of cut, speed, feed and two levels of type of insert material.

-The optimum levels were obtained by the application of taguchi-grey-fuzzy method.

-Based on confirmation test, this technique gave 38% increment in multi response performance index (MRPI) which is the combined effect of all the three responses.

-Productivity and roughness increased by 37% and 61 %.

EDUCATION

VJTI, Mumbai, Ph.D. (Mechanical)

August 2017–December 2023

Title: Manufacturing and Characterization of Nanocellulose/PLA Bio-degradable Composites

Techniques used:

- Chemical Extraction of cellulose nanofibers
- Fused filament fabrication
- Tensile and Flexural testing
- MCDM: TOPSIS
- Material Characterization: SEM,TEM,TGA,FT-IR

D.J. Sanghvi COE, Vile Parle, M.E. (Manufacturing Systems)- First Class

October 2011–January 2014

Title: Quality Improvement in EDM Process through Parametric Optimization.

AWARDS & CONTRIBUTIONS

- “Best Poster” award in National Symposium (Technical and Applied Chemistry Department, VJTI, January 2020)

- Reviewer for Journal of Applied Polymer Science (Wiley Publications)

-Active participation and coordination of 2 International Conferences held in Saraswati College of Engineering, Kharghar.

PERSONAL DETAILS

Date of Birth: 24th June, 1983

Languages Known: Marathi, English and Hindi

Marital status / Children: Married / One

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Jai Hind Colony, Near SVC bank,
Dombivli (west), Dist. Thane
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Date: [Dr. Mugdha Dongre]

Place: Mumbai