VIVEK S

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Bangalore, India

Profile

A versatile, passionate, and interdisciplinarily trained mechanical engineering graduate presently working as a project assistant at CGPL, IISc. An application-oriented individual with problem-solving abilities in design, simulation, and manufacturing research. Driven to make a positive impact on the undertaken project.

Education

Bachelor of Technology in Mechanical Engineering 2018 – 2021 | Bangalore, India

PES University

CGPA - 7.42/10

Diploma in Mechanical Engineering 2015 – 2018 | Bangalore, India

S J Govt. Polytechnic

Percentage - 79/100

Professional Experience

Project Assistant March 2022 – present

CGPL, IISc Bangalore, India

As a Project Assistant, the work primarily involved process testing and optimization of Biomass gasification coupled with a gas separation system to obtain high purity ISO grade hydrogen for downstream applications. Some of the roles performed during the tenure were:

- Optimizing the operation of the 10 Kg/hr and 100 Kg/hr gasifiers to generate Bio-Syngas, which is used to produce Green Hydrogen by gas separation
- Hydrogen separation or purification from Bio-Syngas via PSA technology for Proton-exchange Membrane Fuel Cell (PEMFC) applications
- Analysis of column break-through dynamics and mixed gas adsorption capacity values for a variety of adsorbents
- Theoretical verification and analytical simulation of gas separation unit (VPSA system) using ASPEN Adsorption to study kinetics, isotherms, and scaling up potential
- Characterization of Biomass feed for gasification
- Assisting the Research Scholars in compiling and statistical analysis of the experimental data

Intern August 2021 – February 2022

MEMS Packaging Lab, CENSE, IISc Bangalore, India

As a summer intern was engaged in the study and design of various packaging techniques for different MEMS transducers for industrial applications. A brief description of the work involved:

- Study and design of various packaging techniques for oil-filled and diaphragm-based MEMS transducers for aerospace applications
- Solid modeling of transducer casings on solid edge and finite element analysis (FEA; Ansys) of the modeled components to obtain maximum working pressures at welded joints
- Quality control check and testing of welded components
- 3D printing of modeled components using PLA and ABS plastic

Intern June 2019 – August 2019

Mechatronics Lab, DESE, IISc Bangalore, India

The internship primarily involved product design, prototyping, manufacturing, and testing of biomedical device components. During the internship, I learned:

- Component design drawings and generation of bill of materials
- Application of medical grade silicon in the production of a biomedical device
- Use of CNC lathe and laser cutting machine for prototype manufacturing. Gained hands-on experience of workshop floor etiquette and machining practice

Intern January 2018 | Bangalore, India

Therelek Engineers Pvt. Ltd.

The internship presented an opportunity to train under industrial experts in industrial heat treatment methodologies and quality control practices. A brief understanding of the work involved:

- Quality control and testing of products post heat treatment for grain structure visualization
- Study of different heat treatment methodologies for various machined components based on industrial applications
- Study of furnace design methodology and fabrication techniques

Projects

Bio-dynamic analysis of cells using Tensegrity structures August 2021 – April 2022

The overarching aim of the study is to understand the differences in the dynamic characteristics between healthy and cancerous cells. The objective of the project is to study the dynamic characteristics of a cell by comparing the cell cytoskeleton to spherical tensegrity structures using analytical and simulation methodology. A six-strut tensegrity model was compared and claimed to mimic the behavior of the cell characteristics. Tensegrity models were developed and modal analysis was performed on ANSYS APDL. Dynamic characteristics, natural frequencies, and mode shapes of the developed model were obtained and compared with the literature. The project work was presented at the 5th International and 20th National Conference on Machines and Mechanisms (iNaCoMM-2021) held at IITDM, Jabalpur.

Skills

Design (*Solidedge*, *Solidworks*, *Autocad 360*)

Simulation (ANSYS, COMSOL, ASPEN *Adsorption*)

Manufacturing (*Machining practice*, *advanced manufacturing techniques using CNC Lathe and laser cutting machine*)

Productivity software (*Microsoft office suite*, *Origin pro*, *Zotero*)

Publications

Dynamic analysis of MCF-7 cell using tensegrity model, B. V. Chandan Bharadwaj, K. Abiram, K. Harish, S. Vivek, and C. V. Chandrashekara (Book chapter)

Recent Advances in Machines and Mechanisms. Lecture Notes in Mechanical Engineering. Springer, Singapore.

DOI: https://doi.org/10.1007/978-981-19-3716-3_16

Societal Responsibilities and Volunteering

Rotaract Club of Bangalore Jayanagar - RI ID:8185 (RI Dist. 3190) July 2021 – June 2022

Secretary

Rotaract, the youth wing of Rotary International, a globally known NGO. Serving as the secretary for the Rotaract club of Bangalore Jayanagar during the Rotary year 2021-22. The club had implemented 46 projects, of which, 14 community service projects were undertaken to help and present the needy sections of the community with basic amenities. One of the outstanding projects implemented was a menstrual hygiene workshop for high school students in a rural locality.

Co-curricular Activities

Epitome Tailoring Solutions February 2020 – April 2020

Start-up pitch presentation

As part of the innovation and entrepreneurship course, a start-up plan was established and presented. The plan was devised to promote custom and door-step tailoring services for men. The objective was to launch a domain and mobile app, to present handy options for customizable men's clothing. Through the coursework and project presentation, exposure was gained in understanding market scenarios, customer segmentation, and building a start-up pitch. Gained the essential skillset and knowledge, necessary for entrepreneurial development.

Interests

Reading books, Football, and online gaming