**Athul Karuna Ratnakaran**

101 Patterson Avenue, Scarborough, Ontario, M1L3Y1

Email: athul\_ratnakarank@yahoo.com Cell: +1 647-832-0770

**Objective: MATERIALS ENGINEER**

**Profile**

* 5 years of experience in the field of **Metallurgy** and Materials Science.
* **Master’s degree in Materials Science & Metallurgy.**
* Improved the properties of automotive power train application alloy over 40% by replacing the conventional aluminium alloy with a newly developed magnesium alloy.
* Expertise in **alloy development, metallographic sample preparation, heat treatment, experimental techniques, microstructural characterization, mechanical testing, corrosion and wear.**
* Knowledge in strength of materials, microstructures and effects on mechanical properties.
* Knowledge in **AutoCAD, Solidworks, Pro-E, ANSYS, Microsoft Office.**
* Sound analytical and problem solving skills | detail oriented | multi-tasking | willing to travel and relocate

**Special Skills**

* Demonstrated track record of **developing new alloy systems, heat treatment, characterization and testing**.
* **Metallographic sample preparation** (sectioning, mounting, grinding, polishing, etching) and full metallurgical analysis.
* Support **problem solving / issue resolution; failure analysis; root cause analysis and mechanical, corrosion and wear behavior of materials.**
* **Predict and resolve technical challenges** with minimal assistance to **improve efficiencies and reduce scrap and manufacturing costs.**
* Knowledge in strength of materials, microstructures and effects on mechanical properties.
* Design modifications to documentation: Development and maintaining documentation of process parameters, ability to understand production drawings, material handling and maintenance.
* Data Analysis: Skilled in large volume data analysis, interpretation, documentation, proposal writing, presentation and cost estimation.
* **Development and documentation of lab procedures and standards for** metallurgical evaluations.
* Optimize engineering parameters and recommend measures to improve the consistency, safety, quality, scrap and cost.
* **Supervise, co-ordinate and schedule activities of team members**. Responsible to work with customer to finalize the design, reviews and approvals throughout life cycle of the product.
* Commitment: Consistently achieved the goals and results within deadlines; Strong problem-solving and organization skills; Achieved the project targets in 20% less time than committed without compromising quality and safety.

**TECHNICAL SKILLS**

* Software – **AutoCAD, Solidworks, Pro-E, ANSYS, Microsoft Office, Salesforce, JIRA**
* **XRD**
* Microscopy – **Optical, SEM**
* Mechanical Testing – **Hardness, Tensile and Creep**
* Corrosion Testing – **Immersion, Electrochemical**
* Wear Testing – **Pin on disc machine**

**Publications**

* **K.R.Athul**, A. Srinivasan, U.T.S. Pillai and B.C. Pai; “A Comparative Study on Corrosion Behavior of Mg-Zn-Gd alloys by Varying the Gd Content”; Materials Science Forum; Vols. 830-831 (2015) pp 631-634.
* **K.R.Athul**, A. Srinivasan, U.T.S. Pillai and B.C. Pai; “A Review of different Creep Mechanisms in Mg Alloys Based on Stress Exponent and Activation Energy”; Advanced Engineering Materials; 10.1002/adem.201500393 (2015) pp 1-25.
* P. Ajmal, **K.R.Athul**, A. Srinivasan, U.T.S. Pillai and B.C. Pai; National paper entitled “Effect of Rare Earth Elements on the Mechanical Properties of Mg-Al Alloys”; Indian Foundry Journal; Vol 62 (2016) pp 33-47.
* **K.R.Athul**, A. Srinivasan, and U.T.S. Pillai; “Investigations on the Microstructure, Mechanical, Corrosion and Wear Properties of Mg-9Al-xGd (0, 0.5, 1 and 2 wt%) Alloys.”; Journal of Materials Research Vol 32 (2017) pp 3732-3743.

**Related Professional Experience**

**Materials Engineer (Contract)**  Jan 2019 – March 2019

*KingCast, Stresscrete Inc., Canada*

* Managed multiple projects and developed **Al and Zn alloy castings** for pole components.
* **Selection and procurement of suitable alloy systems**; and documented all parameters used in the process.
* **Assisted in furnace maintenance, preheating of molds and quality inspection** of the developed castings.
* Supervised and worked in liaison with technical and non-technical staff; working within time constraints to meet operational goals.
* **Development and documentation of lab procedures and standards**; Prepared product and progress reports.
* Recommended methods for improving worker efficiency, reducing waste of materials, and utilities such as restructuring job duties, reorganizing work flow, relocating work stations and equipment.
* Coordinated with management schedules for installation of equipment and utilities, and verifies installation is executed successfully and on time.

**Materials Engineer** 2012 – 2017

*Material Science and Technology Division*

*CSIR – National Institute for Interdisciplinary Science and Technology (NIIST), India (under Federal Govt of India)*

* Lead engineering projects that include planning, coordination, and implementation of projects.
* **Developed high temperature resistant alloy** for automotive power train applications by replacing conventional aluminium alloy with a new magnesium alloy thereby improving the mechanical, corrosion and wear properties by 40%.
* Identified the **key alloying additions and optimized** them for improving the properties of alloys.
* **Monitored materials used** and **recommended alternatives** that would reduce cost of project and enhance quality.
* Redesigned the manufacturing processes by researching and taking into account the product requirements without compromising the quality; Reviewed production schedules and estimated future requirements.
* **Prepared the budget** and coordinated with vendors regarding material procurement and documented all materials that were used in process. Assisted supply team and procured materials.
* **Designing of molds, crucibles and furnace maintenance**.
* **Established labour standards, preparing project plans and monitoring performance.**
* **Ensured manufacturability.** (material selection, proper machining techniques, finishes, hardness)
* **Metallographic sample preparation; heat treatment; Machining of the samples using lathe, drilling machine and related machinery.**
* **Microscopic evaluation** using **optical microscope and SEM.**
* Confirmed the suitability of developed alloys for power train applications by **mechanical, corrosion and wear tests**
* Monitored how materials perform; evaluate how they deteriorate; determine causes of product failure and develop solutions
* **Supervised** technical and non-technical staff by designing and coordinating projects, training in data analysis and documentation
* Worked in multi-disciplinary teams of engineers, chemists and statisticians

**Additional Professional Experience**

**Technical Support Professional**

*Teleperformance, Canada* March 2019 – Present

* Deliver service and support to Uber eats restaurant partners.
* Interact with customers to provide and process information in response to enquiries and concerns about products and services.
* Diagnose and resolve technical issues, email clients and research required information using available resources.
* Follow standard processes and procedures; Identify and escalate priority issues per Client specifications.
* Redirect problems to appropriate resource.
* Offer alternative solutions where appropriate with the objective of retaining customers and clients.
* Organize ideas and communicate oral messages appropriate to listeners and situations.
* Follow up and make scheduled call backs to customers and clients where necessary.
* Stay current with system information, changes and updates.

**Lecturer** 2017 – 2018

*Department of Mechanical Engineering, Marian Engineering College, India*

* Lectured undergraduate students on subjects including Automobile Engineering and CAD along with handling laboratory classes for these courses
* Supervised and mentored the B. Tech first year class
* Evaluated B. Tech final year project and seminar
* Member of the organizing committee of various national seminars, workshops and cultural events
* Associate editor of the college newsletter and member of college placement and training center

**Lecturer** 2011 – 2012

*Department of Mechanical Engineering, SCMS College of Engineering and Technology, India*

* Subjects handled included Basic Mechanical Engineering and Principles of Management along with handling laboratory classes
* Supervised the B. Tech first year class
* Evaluated the B. Tech final year seminars

**Education and Training**

**Master’s degree in Mechanical Engineering (Materials Science & Metallurgy) 2009 – 2011**

University of Kerala, India (Canadian Equivalency as assessed by WES)

**Bachelor’s degree in Mechanical Engineering** **2005 – 2009**

University of Kerala, India (Canadian Equivalency as assessed by WES)

**Certifications**

**Supervisor Health and Safety Awareness** 2019

(under Ministry of Labour, Ontario)

**Worker Health and Safety Awareness** 2019

(under Ministry of Labour, Ontario)

**Engineers Bridging Program**  2019

Acces Employment

**Diploma in 3D Modelling and Analysis**  2009, 2018

**Professional Membership**

The Indian Institute of Metals, India (IIM) [id: 0M-51229] 2013 – 2017