

# Curriculum Vitae

## **Garlapati Mohan Muralikrishna**

Ph.D Research Scholar (Direct Ph.D: MS + Ph.D),  
Advanced Materials Research Group of Prof. B.S. Murty,  
Metallurgical and Materials Engineering,  
Indian Institute of Technology Madras,  
Chennai – 600036, India.  
E-mail:- mohanmuralikrishna9@gmail.com  
Mobile:-+91-8374338979

## **Personal Details:**

**Father** : Venkata Ramalingeswara rao Garlapati

**Nationality:** Indian

**Mother** : Lakshmi Garlapati

**Date of Birth** : 06<sup>th</sup> Aug, 1994

**Languages Known:** English, Telugu and Hindi

## **Academic details:**

<b>Degree</b>	<b>University/Institution</b>	<b>Year</b>	<b>Subject</b>	<b>CGPA/Percentage</b>
PhD	Indian Institute of Technology Madras	2015 onwards	Metallurgical & Materials Engineering	8.64/10 (course work)
B.Tech (Major)	RGUKT-Nuzvid	2011-15	Metallurgical & Materials Engineering	8.60/10
B.Tech (Minor)	RGUKT-Nuzvid	2011-2015	Physics (Minor)	7.65/10
PUC	RGUKT-Nuzvid	2009-11	M-BiPC	8.70/10
SSC	Z.P.H.School, Medikondur(Guntur), A.P	2008-09	AP-SSC Board	93.2%

RGUKT – Rajiv Gandhi University of Knowledge Technologies

## **Research Experience (Projects):**

### ***I. Understanding Tracer and Inter Diffusion in Pseudo Binary Multicomponent B2 Aluminides (on going PhD)***

Aim of this project is to understand the phase evolution and thermal stability of HEAs synthesized through mechanical alloying as well as casting and to investigate the order-disorder transformations, thermal stability, microstructural characterization and to determine the diffusion kinetics in fully / partially ordered HEA and high temperature properties in equiatomic as well pseudo binary, pseudo ternary approach.

**Duration:** July 2015 – Present

**2. “Thermal Stability of  $\text{Al}_x\text{CoCrFeNi}$  ( $x=0, 0.3, 0.6, 1$  mole) High Entropy Alloy” (B.Tech Thesis)**

Aim of this project is to understand the phase thermal stability of  $\text{Al}_x\text{CoCrFeNi}$  HEA by varying percentage Al synthesized through mechanical alloying. Mechanically alloyed powders were subjected to various heat treatment and the stability of the phases were investigated through X-ray diffraction. Fraction of phases and grain growth kinetics were measure and correlated them with the percentage of Al.

**Duration:** Aug 2014 – May 2015

**3. “Phase Evolution in  $\text{Al}_x\text{CoCrFeNi}$  ( $x=0, 0.3, 0.6, 1$  mole) High entropy alloy synthesized through mechanical alloying and spark plasma sintering”. (Summer Internship)**

This project aimed at the understanding the phase evolution in  $\text{Al}_x\text{CoCrFeNi}$  HEA by varying percentage Al. Preparation of the alloys were done through mechanical alloying (MA) followed by spark plasma sintering (SPS). Synthesized alloys were subjected to microstructural characterization through Scanning Electron Microscopy (SEM) as well as Transmission Electron Microscopy (TEM) and mechanical property evaluation.

**Duration:** May 2014 – July 2014

**4. “Ultra High Purification of Cadmium by Zone Refining” at C-MET (Centre for Materials for Electronic Technology), Hyderabad, Scientific Socielty, Govt. of india. (Winter Internship)**

Cadmium has been an important element in power sector. It is used in the form of CdTe which will be made as a thin film on solar cells. But purifying cadmium is a tough task and the cost of Cd increases 3-4 orders with increase in 1N purity. As a part of this project a new parameter was optimised to get 7N pure Cd using horizontal zone refiner. 4 zone - 8 pass method was adopted and the level of purity was checked using Inductively Coupled Plasma Mass Spectroscopy (ICPMS).

**Duration:** Dec 2013 – Jan 2014

**Conferences & Workshops:**

1. Work shop on Nano Science and Technology (April 4-5, 2014) at IIT, Madras, Chennai, India.
2. Rahul Bhattacharya, **Mohan Muralikrishna Garlapati** and B.S. Murty “Phase Evolution in  $\text{Al}_x\text{CoCrFeNi}$  ( $x=0, 0.3, 0.6, 1$  mole) High entropy alloy synthesized through mechanical alloying and spark plasma sintering” NMD-ATM, 2014, Pune, India.
3. **G. Mohan Muralikrishna** and B.S. Murty “Thermal Stability of  $\text{Al}_x\text{CoCrFeNi}$  High Entropy Alloy Sinthesized through Mechanical Alloying” In-house Symposium – 2016, IIT Madras, Chennai, India.
4. **G. Mohan Muralikrishna** and B.S. Murty, “Effect of Aluminium Addition on Grain Growth Behavior of  $\text{Al}_x\text{CoCrFeNi}$  High Entropy Alloys Synthesized Through Mechanical Alloying” IWHEM – 2017, Hyderabad, India.
5. **G. Mohan Muralikrishna**, Photomicrography Contest “International Conference on Electron Microscopy and Allied Techniques and XXXVIII Annual Meeting of the Electron Microscope Society of India (EMSI-2017)” 17-19 July, 2017, Mahabalipuram, India.
6. **G. Mohan Muralikrishna** and B.S. Murty “Mechanical Alloying and Spark Plasma

Sintering of AlNi and AlCo Ordered Intermetallic Compounds” In-house Symposium – 2017, IIT Madras, Chennai, India.

7. **G. Mohan Muralikrishna**, R. Ramya and B.S. Murty, “Synthesis of Al(CoNi) and Al(FeNi) Pseudobinary Compounds through Mechanical Alloying and Spark Plasma Sintering” NMD-ATM, 2017, Goa, India.
8. Sushanth Kombattula, **G. Mohan Muralikrishna**, Amirthalingam M. and B.S. Murty, “Precipitation behaviour in Al<sub>0.1</sub>Co<sub>1.5</sub>Cr<sub>1</sub>Fe<sub>1</sub>Ni<sub>1.5</sub>Ti<sub>0.4</sub> High Entropy Alloy” NMD-ATM, 2017, Goa, India.
9. **G. Mohan Muralikrishna**, K. Venkatesh and B.S. Murty, “**Pseudo Binary Aluminides: Multicomponent Intermetallic Compounds**” In-house symposium – 2018, IIT Madras, Chennai, India. (**Best Paper Award**)
10. **G. Mohan Muralikrishna** and B.S. Murty, “Grain growth kinetics in Al<sub>x</sub>CoCrFeNi (x=0, 0.3, 0.6 and 1 mol) synthesized through mechanical alloying”, ISMANAM – 2018, Rome, Italy.

### **Industrial training:**

- Industrial training on "SOLVENT EXTRACTION" of Hafnium (Hf) from the rafnite, RoHS, Metal reduction and Vacuum distillation plants at C-MET, Hyderabad.

### **Research Interests:**

- High Entropy Alloys
- Super alloys, Intermetallics and Ordered - Disorder transformations
- Nano Materials

### **Membership of Academic Bodies:**

- Life Member, Electron Microscopy Society of India
- Life Member, Powder Metallurgy Association of India

### **Hands on experience:**

- **Can operate**
  - Bruker D8, D8 advanced and X’Pert PRO PANlytical X-ray diffractometers
  - Scanning Electron Microscope (SEM) Quanta – 200 (FEI) , Quanta – 400 (FEI)
  - Transmission Electron Microscope CM12
  - Fritsch P-5 high energy ball mill and Simoloyer
  - Spark Plasma Sintering Dr Sinter SPS-5000, (Fuji Electronic Industrial Co., Ltd., Saitama, Japan)
  - Nano Indentation, TI 950 Triboindenter, Hysitron
  - Differential Scanning Calorimeter, Setaram Labsys Evo TGA
  - Horizontal Zone Refiner both in manual and automated modes
  - Vacuum Arc Melting
  - Vacuum Heat Treatment furnaces
  - Hardness(Brinell, Rockwell), Impact (Charpy & Izod)Testing machines
- **Tools**

- Origin
- Xpert High Score Plus & FullProf Suite
- Digital Metallograph 3, Image J
- MultiDiflux

### **Academic Achievements:**

- Received **DAAD sandwich scholarship** to pursue research work at University of Muenster, Muenster, Germany (August 2018 – September 2019)
- Received **best paper award** at In-house symposium – 2018, organized by Dept. of MME, IIT Madras
- Qualified GATE 2015 with **All India Rank 563**
- Received **best paper award** at TEKZITE 2K13, organized by Dept. of MME, RGUKT-Nuzvid
- Received **Dr.Ramineni Prathibha Puraskaram Award & Gold Medal** in 2009.
- Division (Medikondur, Guntur (Dt), A.P, India) **topper in SSC 2009**.
- District (Guntur, A.P, India) level **2<sup>nd</sup> prize in Elocution** Competition in 2008.
- Participated in District (Guntur) level Science fair Competition in 2008.

### **Extra-Curricular Activities:**

- Organising committee member for the “International Conference on Electron Microscopy and Allied Techniques and XXXVIII Annual Meeting of the Electron Microscope Society of India (EMSI-2017)” 17-19 July, 2017, Mahabalipuram, India.
- Coordinator for the Quiz committee of International Symposium for Research Scholars, 2016 (ISRS-2016) held at IIT Madras, Chennai, India.
- Coordinator for the In-house Symposium, 2016 (IHS-2016), IIT Madras, Chennai, India.
- Coordinator for Institute research fests TEKZITE 2K13 and TEKZITE 2K14 held at RGUKT-Nuzvid, A.P, India.
- Secretary for the GATE Club 2014-2015 at RGUKT-Nuzvid, A.P, India.
- Representative for Metallurgical and Materials Engineering department from 2012-2015, at RGUKT-Nuzvid, A.P, India.
- Secretary for the English Club 2013-2014 at RGUKT-Nuzvid, A.P, India.