

Curriculum Vitae

Dr. K. Guruvathyathri

Assistant Professor

School of Engineering Sciences

University of Hyderabad

Research Profile:

Areas: Computational thermodynamics, Calphad, Phase transformations, Alloy design, High-entropy alloys.

- *Computational research skills:*
 - Thermodynamic assessment.
 - Phase diagram and thermodynamic property diagram calculations.
 - Software: Thermo-Calc, Dictra and Matlab.
- *Experimental research skills:*
 - Characterization: scanning electron microscopy, X-ray diffraction, and differential scanning calorimeter.
 - Synthesis: Vacuum arc melting and mechanical alloying.
 - Experiments: Diffusion couple, equilibration and phase stability.

Teaching profile:

- Ad-hoc faculty in Metallurgical and Materials Engineering, NIT Andhra Pradesh, (July – Dec 2019)
- Teaching Preference: Materials modelling, Computational thermodynamics, Thermodynamics and kinetics of materials, Physical metallurgy, Phase transformations, Engineering mathematics.
- Courses taught: Transport phenomena and X-ray diffraction & electron microscopy.

Industry Experience:

- Manager, Corporate Technology Center, Tube Investments of India Ltd, Chennai, India. (July 2011-July 2013)
 - Process optimization for stainless steel arc welding. Won Rs. 50000 cash award for contribution to process optimization involving difficult-to-weld grades and establishment of corrosion & microanalysis lab.
 - Metallurgical failure analysis.
- Deputy Manager, Research and Development department in Essar Steels Ltd, Surat, India. (July 2010-June 2011)
 - Established a pilot level sinter plant for blast furnace burden research.
- Graduate Engineer Trainee, Production department, TVS – Brakes India Foundry Ltd, Sholinghur, India (May 2007-Jan 2008)
 - Production.

Education details:

Degree	Discipline	Year	Institute/university
PhD	Metallurgical and Materials Engineering	2019	IIT Madras & NTHU Taiwan
MTech	Metallurgical and Materials Engineering	2010	IIT Madras
BE	Metallurgical Engineering	2007	GCE Salem, Anna University
All India Rank 71 in GATE 2007 Metallurgical Engineering			

PhD thesis:

Experimental and Computational Thermodynamic Studies on CoCrMnNi, CoCrCuMnNi and AlCoCrMnNi High-Entropy Alloys, under the guidance of Prof. B.S. Murty, Prof. K.C. Hari Kumar and Prof. J.W. Yeh.

Publications:**Book Chapter:**

1. K. Guruvidyathri and B.S. Murty, Chapter name (tentative): Thermodynamics of high-entropy alloys, in: T.S. Srivatsan and Manoj Gupta (Eds.), High Entropy Alloys: Innovations, Advances, and Applications. Taylor & Francis group. In press. ISBN 9780367356330.

Research articles:

1. K. Guruvidyathri, B.S. Murty, J.W. Yeh, and K.C. Hari Kumar, "Gibbs Energy-Composition Plots as a Tool for High-Entropy Alloy Design", J. Alloys Compd., 768 (2018) 358-367.
2. K. Guruvidyathri, K.C. Hari Kumar, J.W. Yeh, and B.S. Murty, "Topologically Close-packed Phase formation in High Entropy Alloys: A Review of Calphad and Experimental Results", JOM, 69 (2017) 2113-2124.
3. M. Vaidya, K. Guruvidyathri and B.S. Murty, "Phase formation and thermal stability of CoCrFeNi and CoCrFeMnNi equiatomic high entropy alloys", J. Alloys Compd., 774 (2019) 856-864.
4. A. Karati, K. Guruvidyathri, V.S. Hariharan and B.S. Murty, "Thermal stability of AlCoFeMnNi high-entropy alloy", Scr. Mater. 162 (2019) 465-467.
5. L. Raman, K. Guruvidyathri, G. Kumari, S.V.S. Narayana Murty, R.S. Kottada and B.S. Murty, "Influence of processing route on the alloying behaviour, microstructural evolution and thermal stability of CrMoNbTiW refractory high entropy alloy", J. Mater. Res., 34 (2019) 156-166
6. T. Parida, A. Karati, K. Guruvidyathri, B.S. Murty, G. Markandeyulu, "Novel rare-earth and transition metal-based entropy stabilized oxides with spinel structure". Scripta. Mat., 178 (2020) 513-517.
7. L. Raman, G. Karthick, K. Guruvidyathri, D. Fabijanic, S. V. S. Narayana Murty, R.S. Kottada and B. S. Murty, "Microstructural evolution in CrMoNbTiW refractory high

entropy alloy synthesized through mechanical alloying and vacuum arc melting”. J. Mater. Sci. In press.

8. A. Karati, V.S. Hariharan, S. Ghosh, A. Prasad, M. Nagini, K. Guruvidyathri, R. C. Mallik, R. Shabadi, L. Bichler, B.S. Murty, U.V. Varadaraju, “Thermoelectric properties of half-Heusler high-entropy $Ti_2NiCoSn_{1-x}Sb_{1+x}$ ($x=0.5, 1$) alloys with $VEC>18$ ”, Scripta Mat.

Google Scholar Profile <https://scholar.google.co.in/citations?user=jzA0MnQAAAAJ&hl=en>

Conference presentations:

International:

1. K. Guruvidyathri, S. Sridar, B.S. Murty, J.W. Yeh, and K.C. Hari Kumar, “Thermodynamic Assessment of Co-Cr-Mn System for Improved Calphad Prediction of σ -Phase in High Entropy Alloys”, Intermetallics 2017, Bad Staffelstein, Germany.
2. K. Guruvidyathri, K.C. Hari Kumar, J.W. Yeh and B.S. Murty, “Phase Prediction and Validation Studies in AlCoCrMnNi Multiprincipal Element Alloy”, International Conference on High Entropy Materials, 2016, Hsinchu, Taiwan.
3. K. Guruvidyathri, R. Kirana, M. Vaidya, K.C. Hari Kumar and B.S. Murty, “Phase Prediction Studies in AlCoCrFeNi High Entropy Alloy”, International Conference on Metals and Materials Research, 2016, Bangaluru, India.
4. K. Guruvidyathri, B.S. Murty and K.C. Hari Kumar, “Stability of Solidified Microstructure in Co-Cr-Fe-Ni Alloy”, 6th International Conference on Solidification Science and Processing, 2015, Hyderabad, India.

National:

1. K. Guruvidyathri, B.S. Murty and K.C. Hari Kumar, “Phase prediction in multi-principal element systems through CALPHAD Method: A case study on Co-Cr-Fe-Ni System”, National Workshop on High Entropy Alloys, 2015, Chennai.
2. K.S.N. Satish Idury, K. Guruvidyathri, Kaivalya Deo, B.S. Murty, and Jatin Bhatt, “On high entropy bulk metallic glass formation in Zr-Ti-Cu-Ni-Al system based on binary eutectic cluster model and CALPHAD”, NMD ATM 2016, IIT Kanpur. (Awarded second best presentation in the Integrated Computational Materials Engineering theme).
3. K. Guruvidyathri, S.S.S. Sathwika, B.S. Murty and K.C. Hari Kumar “Phase prediction studies on Co-Cr-Cu-Mn-Ni multi-principle element alloy”, In-House Symposium, 2015, IIT Madras.
4. K. Guruvidyathri, B.S. Murty, J.W. Yeh, and K.C. Hari Kumar, “Binary $G-x$ plots as an Aid in Designing High-Entropy Alloys”, In-House Symposium, 2018, IIT Madras. (Awarded best presentation in the Modelling theme).
5. K. Guruvidyathri, B.S. Murty, J.W. Yeh, and K.C. Hari Kumar, “Calphad and Experimental Studies on AlCoCrMnNi and CoCrCuMnNi High Entropy Alloys”, In-House Symposium, 2017, IIT Madras.

Personal details:

Date of Birth: 31. 05. 1985

Citizenship: Indian

Marital Status: Married

Languages: Tamil, English, Hindi and Telugu

Hobbies: Science communication (Blogger and Youtuber)

Contact Details:

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Updated on 24th May 2020.