



Dr. Athira K S

Scientist-B, ARCI, Hyderabad

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Academics

- JAN 2018 - JUNE 2024
Ph.D. & M.Tech
Department of Materials Science & Metallurgical Engineering
Indian Institute of Technology (IIT) Hyderabad
- AUG 2013 - JULY 2017
B.S. (Research)
Materials
Indian Institute of Science (IISc), Bangalore

Experience

- DEC 2024 - Ongoing
Scientist-B
Center for laser processing of materials
International advanced research center for powder metallurgy and new materials (ARCI), Hyderabad

Expertise

- Experimental (hands-on)
Welding (keyhole-GTAW, Laser), Additive manufacturing (EBM)
Microscopy (SEM, TEM, EBSD, EDS, STEM)
XRD, AFM, Nanoindentation, Tensile testing
- Materials
Ni-base Superalloys: Haynes 282, Inconel 740H, Inconel 939
Precipitation strengthened Co-base superalloys
- Materials Modeling
Thermodynamic CALPHAD based modeling
Thermo-Calc - graphical and console mode
Equilibrium | Scheil | Dictra | TC-Prisma
- Other coding
C++ | MATLAB | ABB robotic arm software

Publications

- **Sunkari, U., Reddy, S. R., Athira, K. S., Chatterjee, S., & Bhattacharjee, P. P. (2020).** Effect of niobium alloying on the microstructure, phase stability and mechanical properties of CoCrFeNi₂. 1Nb_x high entropy alloys: Experimentation and thermodynamic modeling. *Materials Science and Engineering: A*.
- **Peddiraju, V. C., Athira, K. S., Simhambhatla, S., & Chatterjee, S. (2021).** Enhancing Surface Hardness of Titanium Through Ni-Ti Intermetallic Microstructures Formed In Situ During Weld Deposition of Nickel. *Metallurgical and Materials Transactions A*.
- **Athira K. S., E. Nandha Kumar, Subhradeep Chatterjee, Dheepa Srinivasan. (2022).** Effect of Heat Treatments on the Structure and Properties of Laser Powder Bed Fusion Inconel 939 Alloy. *Proceedings of ASME 2022. I-AM 2022, Lisbon, Portugal*.
- **Athira, K. S., Pandey, P., Prabhakar, K. V., Chattopadhyay, K., & Chatterjee, S. (2022).** Laser welding of a W-free precipitation strengthened Co-base superalloy. *Journal of Materials Science*.
- **Athira, K. S., & Chatterjee, S. (2023).** Effect of Keyhole Gas Tungsten Arc Welding and Post-welding Heat Treatment on Microstructure and Hardness of Inconel 740H. *Journal of Materials Engineering and Performance*.
- **Athira, K. S., & Chatterjee, S. (2024).** High-current gas tungsten arc welding of Ni-base superalloy Haynes 282: correlating heat input with weld profile, microstructure, hardness and indentation size effect. *Materials Science and Technology*.

Conference presentations

- **K. S. Athira, G. Muvvala, S. Chatterjee,** Effect of laser surface remelting of Ni-base superalloy Haynes 282. 4th EuroSuperalloys 2022, Bamberg, Germany.
- **K. S. Athira, E. NandhaKumar, S. Chatterjee, Dheepa Srinivasan.** Understanding the microstructural evolution in laser powder bed fusion Inconel 939. *International conference on powder metallurgy 2022 (PM-22), Virtual mode*.
- **K.S. Athira, P. Pandey, S. Mukhopadhyay, K.V. Phani Prabhakar, K. Chattopadhyay, S. Chatterjee.** Using microscopy to understand solute partitioning and microstructural evolution in a Co-based superalloy weld. *APMC-2020, Hyderabad, India*.
- **K.S. Athira, P. Pandey, S. Mukhopadhyay, K.V. Phani Prabhakar, K. Chattopadhyay, S. Chatterjee.** Laser welding studies on a precipitation strengthened Co-base superalloy. *NMD ATM 2019, Trivandrum, India*.

Awards

- OmVimla award for innovation in materials for society, IIT Hyderabad
- IFSM Students/Young Researchers award, APMC 2020 conference
- KVPY SX 2013 Fellowship (continued for 2014-2017)

Research Experience

- DEC 2023 – Ongoing • **Electron beam melting additive manufacturing of Ti-6Al-4V**
Center for laser processing of materials, ARCI
- JAN 2018 – NOV 2023 • **Welding studies on precipitation strengthened Co- & Ni-base superalloys**
PhD work [Supervisor: Dr. Subhradeep Chatterjee, IIT Hyderabad]
- AUG 2021 – AUG 2022 • **Laser powder bed fusion of Inconel 939 & heat treatment studies**
Collaboration work between Pratt & Whitney and IIT Hyderabad
Athira K S and Dr. Subhradeep Chatterjee, IIT Hyderabad
Dr. Nandha Kumar E and Dr. Dheepa Srinivasan, Pratt & Whitney
- 2020 • **Effect of niobium alloying on the microstructure, phase stability and mechanical properties of CoCrFeNi_{2.1}Nbx high entropy alloys: Experimentation and thermodynamic modeling (CoCrFeNi_{2.1}Nbx)**
Collaboration work in IIT Hyderabad: U. Sunkari, S.R. Reddy, K. S. Athira, S. Chatterjee, P.P. Bhattacharjee.
- AUG 2016 – APR 2017 • **Mechanical characterization of the properties of Nb microwires extracted from Cu-Nb composite and commercially available microwires**
BS project, IISc Bangalore
Supervisor: Dr. Atul H. Chokshi, IISc, Bangalore
- MAY 2016 – JUL 2016 • **Characterization of Nanoliposomes for the treatment of atherosclerosis**
Research Fellowship of NTU, Singapore
Supervisor: Dr. Ng Kee Woei, Nanyang Technological University, Singapore
- MAY 2015 – JUL 2015 • **Study on the translational regulation of CAMKII protein**
Summer Research Fellowship of the Indian Academy of Sciences, Bangalore
Supervisor: Dr. Ravi Muddashetty, Centre for Brain Development & Repair, inStem, NCBS, Bangalore
- MAY 2014 – JUL 2014 • **Electrospinning for Nanofiber fabrication**
Supervisor: Dr. Kaushik Chatterjee, IISc, Bangalore