Dr. K N Chaithanya Kumar
Assistant Professor
Department of
Mechanical Engineering
Email: knc@psgias.ac.in

Address: Room No. KR304,
K-Block,
PSG Institute of Advanced Studies,
Peelamedu, Coimbatore-641004

BIOSKETCH

Dr. K. N. Chaithanya Kumar is a physical metallurgist whose research focuses on understanding the relationships between processing, microstructure, crystallographic texture, deformation mechanisms, and mechanical performance in metallic materials. His research spans manufacturing processes, physical metallurgy, and mechanical behaviour, supported by advanced characterization and complementary computational approaches to address fundamental and applied challenges in metallic materials. His expertise includes alloy development, phase transformations, microstructural and crystallographic characterization using SEM, TEM, EBSD, and XRD, as well as investigating the relationships between processing, microstructure, crystallographic texture, and mechanical behaviour. He actively seeks collaborations with academia, research laboratories, and industry to advance the science and engineering of metallic materials and advanced manufacturing technologies.

Educational Profile

- **Doctor of Philosophy (Ph.D.)**
  Indian Institute of Technology Roorkee
  Year of Passing: 2023
  Thesis title: Effect of thermomechanical processing and alloy additions on the evolution of microstructure in two phase titanium alloys
  Thesis Supervisor: Dr. K. S. Suresh, Department of Metallurgical and Materials Engineering, IIT Roorkee.

- **Master of Technology (M.Tech.) in Industrial Metallurgy**
  Department of Metallurgical and Materials Engineering
  Indian Institute of Technology Roorkee

- **Bachelor of Technology (B.Tech.) in Mechanical Engineering**
  Jawaharlal Nehru Technological University Anantapur

Positions Held

Jan 2024 – Jun 2026	Postdoctoral Research Associate Supervisor: Prof. Narendra Dahotre Center for Agile and Adaptive Additive Manufacturing University of North Texas, USA.
Aug 2023 – Dec 2023	Post-Doctoral Fellow

	Supervisor: Prof. Satyam Suwas Department of Materials Engineering, Indian Institute of Science, Bengaluru

Research Areas:

- Physical Metallurgy (alloy development and phase transformations)
- Advanced Manufacturing and Additive Manufacturing
- Thermo-mechanical Processing
- Microstructure and Crystallographic Texture Evolution
- Structure–Property Correlations in Metallic Materials
- Mechanical Behaviour of Materials
- Advanced Materials Characterization and Electron Microscopy
- Structural Metallic Materials and Engineering Alloys

Journal Publications

(20) M. Radhakrishnan, S. Sharma, S. Palaniappan, **K. N. Chaithanya Kumar**, N. B. Dahotre. *Thermal Management Induced Evolution of Microstructures in Laser-Based Additive Manufacturing of HT9 Ferritic/Martensitic Steel.* **Journal of Materials Processing Technology**, **353** (2026), 119348. https://doi.org/10.1016/j.jmatprotec.2026.119348

(19) K. N. Chaithanya Kumar, M. Radhakrishnan, Z. W. Hughes, S. Palaniappan, S. Sharma, R. Banerjee, S. Suwas, N. B. Dahotre. *Thermokinetics Driven Microstructural Evolution During Laser-Based Additive Manufacturing of γ-TiAl Alloy.* **Intermetallics**, **187** (2025), 108984. https://doi.org/10.1016/j.intermet.2025.108984

(18) S. M. Patil, **K. N. Chaithanya Kumar**, M. Radhakrishnan, S. Sharma, S. S. Joshi, J. Kumar, R. Banerjee, N. B. Dahotre. *Effect of Heating Rates on Non-Isothermal and Isothermal Oxidation Behavior of Additive Friction Stir Deposited Nickel-Based Superalloy IN625.* **Corrosion Science**, **256** (2025), 113174. https://doi.org/10.1016/j.corsci.2025.113174

(17) K. N. Chaithanya Kumar, K. S. Suresh. *Effect of Alloying (V, Fe, Ge) Additions on Microstructural Evolution in Ti–6Al–4V-Based Alloys After Hot Rolling and Annealing.* **Journal of Alloys and Metallurgical Systems**, **9** (2025), 100176. https://doi.org/10.1016/j.jalmes.2025.100176

(16) M. S. Ramalingam, **K. N. Chaithanya Kumar**, S. Sharma, S. S. Joshi, N. B. Dahotre. *Binder Jet Additive Manufacturing: A Review of Modelling Approaches and Experimental Observations on Green Part Printing.* **Virtual and Physical Prototyping**, **20** (2025), e2547091. https://doi.org/10.1080/17452759.2025.2547091

(15) K. B. Patel, S. S. Joshi, **K. N. Chaithanya Kumar**, S. M. Patil, S. Sharma, N. B. Dahotre. *Binder Jet Additive Manufacturing of Tungsten Carbide–Cobalt Tooling Material.* **Powder Metallurgy** (2025). https://doi.org/10.1177/00325899251348358

(14) M. Radhakrishnan, J. Kumar, **K. N. Chaithanya Kumar**, S. K. Sarkar, K. K. Verma, S. Palaniappan, S. Dussa, S. Sharma, N. B. Dahotre. *Additive Manufacturing of Ti/Zr/Mo/Al Lightweight Refractory Complex Concentrated Alloy: Integrated Computational Materials Engineering Approach.* **Intermetallics**, **184** (2025), 108835. https://doi.org/10.1016/j.intermet.2025.108835

(13) M. Radhakrishnan, S. Sharma, S. Palaniappan, **K. N. Chaithanya Kumar**, K. K. Verma, N. B. Dahotre. *Processing Conditions-Dependent Evolution of Microstructure in Laser Additive Manufactured HT-9 Ferritic-Martensitic Steel.* **JOM**, **77** (2025), 2888–2896. https://doi.org/10.1007/s11837-025-07304-3

(12) T. G. Nikhil, **K. N. Chaithanya Kumar**, Shardendu Shukla, B. Bhav Singh, K. S. Suresh, R. Arockia Kumar. *Effects of Hot Rolling on the Microstructure, Mechanical, and Damping Properties of High-Nitrogen Stainless Steel.* **Steel Research International**, **96** (2024), 2400785. https://doi.org/10.1002/srin.202400785

(11) K. N. Chaithanya Kumar, S. Sharma, M. Radhakrishnan, R. Randhavan, K. K. Verma, S. Dowden, Z. W. Hughes, R. Banerjee, N. B. Dahotre. *Electron Beam Additive Manufacturing of SS316L with a Stochastic Scan Strategy: Microstructure, Texture Evolution, and Mechanical Properties.* **Metals**, **14** (2024), 1278. https://doi.org/10.3390/met14111278

(10) K. N. Chaithanya Kumar, Mohan Sai Ramalingam, Sameehan Joshi, Shashank Sharma, Narendra B. Dahotre. *Role of Powder Morphology in Liquid Phase Sintering of Binder Jet Additively Fabricated WC–Co Composite.* **Additive Manufacturing**, **95** (2024), 104520. https://doi.org/10.1016/j.addma.2024.104520

(9) K. N. Chaithanya Kumar, Shashi Mohan Rao Varukuti, K. S. Suresh. *Thermal Stability of Hardness and Modulus in Martensitic Ti–6Al–4V-Based Alloys: Role of V, Fe, and Ge Solute Contents.* **Metallurgical and Materials Transactions A**, **55** (2024), 1258–1270. https://doi.org/10.1007/s11661-024-07332-9

(8) Palash Chandra Maity, Narasimha Vinod Pulagara, Mamleshwar Kumar, **K. N. Chaithanya Kumar**, Taraknath Das, K. S. Suresh, Indranil Lahiri. *Graphene Growth by Chemical Vapour Deposition on Cross-Rolled Surface-Textured Nickel–Copper Foils.* **CrystEngComm** (2024). https://doi.org/10.1039/D4CE00090K

(7) Shashi Mohan Rao Varukuti, **K. N. Chaithanya Kumar**, K. S. Suresh. *Effect of Rolling Temperature and Annealing on Grain Refinement in TiNiCu Shape Memory Alloys.* **Journal of Materials Engineering and Performance** (2023). https://doi.org/10.1007/s11665-023-08825-1

(6) K. N. Chaithanya Kumar, Mohit Madhavi, K. S. Suresh. *Deformation Behavior of the Mg–Zn–Zr–Nd–Gd Alloy.* **Materialia**, **27** (2023), 101671. https://doi.org/10.1016/j.mtla.2022.101671

(5) K. N. Chaithanya Kumar, R. Prasath Babu, K. S. Suresh. *Effect of Prior Deformation on the Formation of Martensite in Ti–6Al–4V Alloy.* **JOM**, **74** (2022), 4081–4093. https://doi.org/10.1007/s11837-022-05476-w

(4) K. N. Chaithanya Kumar, Atharva Pagare, H.-G. Brokmeier, M. Sankar, Norbert Schell, K. S. Suresh. *Transformation Textures in Ni-Rich NiTi Shape Memory Alloy.* **Materials Science and Engineering: A**, **835** (2022), 142594. https://doi.org/10.1016/j.msea.2022.142594

(3) K. N. Chaithanya Kumar, K. S. Suresh. *Reduction in Anisotropy of Mechanical Properties of Ti–6Al–4V Through Martensite Decomposition.* **Materials Letters**, **306** (2022), 130903. https://doi.org/10.1016/j.matlet.2021.130903

(2) Akanksha R. Urade, **K. N. Chaithanya Kumar**, Narasimha Vinod Pulagara, Indranil Lahiri, K. S. Suresh. *Grain Growth in Pulse Reverse Electrodeposited Copper Foil: Contrasting Effects of Duty Cycle During Deposition and Annealing.* **Surface and Coatings Technology**, **443** (2022), 128606. https://doi.org/10.1016/j.surfcoat.2022.128606

(1) Palash Chandra Maity, Narasimha Vinod Pulagara, **K. N. Chaithanya Kumar**, Indranil Lahiri, K. S. Suresh. *Stability and Deviations from the Cube Texture During Rolling and Annealing of Ni Foil.* **Materials Chemistry and Physics**, **297** (2023), 127326. https://doi.org/10.1016/j.matchemphys.2023.127326