



Subray R. Hegde

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Education:

Ph.D. (Aerospace Engineering) – Carleton University, NRC-Canada

M.A.Sc. (Materials Engineering) – University of British Columbia-Canada

M.Sc.(Engg.) (Metallurgy) – Indian Institute of Science, Bangalore

B.E. (Metallurgical Engineering) – National Institute of Technology Karnataka, Surathkal, India

Professional Experience:

Assistant Professor, MME/NITK (2013/2019)

Associate Professor, MME/NITK (2019/2023)

Professor, MME/NITK (2023 onwards)

Materials Scientist – Corporate R& D, Johns Manville, USA (2012/2013)

Senior Materials Engineer – Life Prediction Technologies, Canada (2010/2012)

Management Trainee – TI Diamond Chain Ltd, Chennai (1999/2000)

Visiting Guest Worker – National Research Council Canada 2006/2010

Funded R&D Projects

1. *Development of deformation mechanism maps for gas turbine disc materials*, for LPTi, funded by Federal Development Ontario (2010/12)
2. *Development of deformation mechanism maps for Grade-91 alloy*, for LPTi funded by Materials Technology Lab, Natural Resources Canada (2011/12)
3. *High temperature oxidation kinetics and prognostics of thermal barrier coatings*, for LPTi funded by NRC Canada (2010/12)
4. *Life extension of K-Type thermocouples*, for NITK funded by MRPL-ONGC (2018/21)

Funded Consultancy Projects

Completed 57 projects and generated Rs. 1.57 Cr for NITK, funded by MRPL, MCF, KRCL, etc.

Research Guidance

Completed 2 PhD & 2 MTech(Research) theses

1 On-going PhD & 1 MTech(Research) theses.

Technical Papers

1. Basavaraj, Lokendra Potphode, Preetish d'silva, Subray Hegde
Role of δ -Phase on Recrystallization Behavior of Inconel 718, Materials Science and Technology (Accepted)
2. Preetish C. Dsilva, Basavaraj Padasale, Jitesh Vasavada, Sushil Mishra & Subray R. Hegde
Annealing Behavior of Cold-Rolled Inconel 601 (2023) Journal of Materials Engineering and Performance
3. Rakshan Kumar, J.K., Bhattacharjee, D., Dsilva, P., Praveen, R., Hegde, S.R.
Creep cavitation damage of K-type thermocouples (2023) Engineering Failure Analysis, 143
4. Padasale, B., Kulkarni, G.S., Rakshan Kumar, J.K., Govindaran, S., Hegde, S.R.
Failure analysis of a fire water jockey pump shaft (2022) Engineering Failure Analysis, 142
5. Sondar, P.R., Gurudath, B., Ahirwar, V., Hegde, S.R.

- Failure of hydraulic lathe chuck assembly (2022) *Engineering Failure Analysis*, 133.
6. Shetty, P., Dsilva, P., Sondar, P., Kumar, B.G., Hegde, S.
Biodegradation of PEEK Piston Rings (2021) *Polymer Degradation and Stability*, 191.
 7. Chawla, S., Larsson, S., Huang, H., Hegde, S.R.
Anti-corrosion treatment for bearing steel (2021) *AIP Conference Proceedings*, 2341
 8. Dsilva, P.C., Shetty, P., Sondar, P.R., Ganesh Kumar, B., Hegde, S.R.
Failure Analysis of Reciprocating CO₂ Compressor
(2021) *Journal of Failure Analysis and Prevention*, 21 (2), pp. 595-603.
 9. Gurudath, B., Kumawat, K.K., Tejaswi, V., Sondar, P.R., Rakshan Kumar, J.K., Hegde, S.R.
Failure Analysis of a Bucket Elevator Shaft
(2021) *Journal of Failure Analysis and Prevention*, 21 (2), pp. 563-569.
 10. Dsilva, P.C., Bhat, S., Banappanavar, J., Kodancha, K.G., Hegde, S.R.
Premature failure of superheater tubes in a fertilizer plant
(2021) *Engineering Failure Analysis*, 121.
 11. Hegde, S.R., Rakshan Kumar, J.K., Sondar, P., Dsilva, P.C.
Catastrophic failure of urea prill-tower fan
(2021) *Engineering Failure Analysis*, 121.
 12. Basavaraj, Sondar, P.R., Hegde, S.R.
Effect of spheroidization of cementite in ductile cast iron
(2021) *International Journal of Minerals, Metallurgy and Materials*, 28 (3), pp. 404-411.
 13. Mirashi, V.U., Johnson, S., Hegde, S.R., Vijayan, V., Govindarajan, S.
Failures Investigation of Marine Propellers in Corrosive Environments
(2021) *Springer Proceedings in Materials*, 13, pp. 37-46.
 14. Padasale, B., Kumar, J.K.R., Sondar, P.R., Govindarajan, S., Hegde, S.R.
Failure Analysis of Cooling Tower Fan-Arm
(2020) *Journal of Failure Analysis and Prevention*, 20 (4), pp. 1417-1425.
 15. Sondar, P.R., Kumar, J.K.R., Chawla, S., Dsilva, P.C., Hegde, S.R.
Failure of a Cooling Water Pump Shaft
(2020) *Journal of Failure Analysis and Prevention*.
 16. Sondar, P.R., Hegde, S.R.
Deep cryogenic treatment of plain-carbon and low-alloy steels
(2020) *Materials Performance and Characterization*, 9 (1), pp. 346-356.
 17. Asadi, M., Guillot, D., Weck, A., Hegde, S.R., Koul, A.K., Sawatzky, T., Saari, H.
Constructing a validated deformation mechanisms map using low temperature creep strain accommodation processes for nickel-base alloy 718 (2012) *American Society of Mechanical Engineers, Pressure Vessels and Piping Division (Publication) PVP*, 2, pp. 65-73.
 18. Hegde, S.R., Kearsey, R.M., Beddoes, J.C.
Designing homogenization-solution heat treatments for single crystal superalloys
(2010) *Materials Science and Engineering A*, 527 (21-22), pp. 5528-5538.
 19. Hegde, S.R., Kearsey, R.M., Saari, H., Beddoes, J.
Microstructure refinement of as-cast single crystal superalloys by re-solidification
(2010) *Advanced Materials Research*, 89-91, pp. 250-255.

20. Hegde, S.R., Kearsey, R.M., Beddoes, J.
Design of solutionizing heat treatments for an experimental single crystal superalloy
(2008) Proceedings of the International Symposium on Superalloys, pp. 301-310.
21. Hegde, S.R., Kearsey, R.M., Beddoes, J.C.
Resolidification behavior of single-crystal superalloys
(2007) Scripta Materialia, 57 (9), pp. 837-840.
22. Akhtar, A., Hedge, S., Reed, R.C.
The oxidation of single-crystal nickel-based superalloys
(2006) JOM, 58 (1), pp. 37-42.
23. Kavitha, R., Hegde, S.R., Jayaram, V.
Oxide films by combustion pyrolysis of solution precursors
(2003) Materials Science and Engineering A, 359 (1-2), pp. 18-23.

Patents

1. S.R. Hegde, N. Chalasani, *Submerged combustion burner and melter, and method of use*,
Granted US patent (9777922) for Johns Manville.
2. S. R. Hegde, "Submerged Combustion Burners" Granted US patent for Johns Manville.
3. Subray R Hegde, Preetish Dsilva, *Method and system for producing elongated grains in wrought metals with superior creep resistance*. Granted Indian Patent for NITK (465865)
4. Subray R Hegde, J K Rakshan Kumar, Sudhir Hegde, Sudarshan B, Jayarama Bhat M, Ganesh Bhat, Allen John, Praveen R, *Industrial thermocouples with superior creep resistance, published Indian Patent (Application No. 201941033961; jointly filed by NITK & MRPL)*

Professional Association:

1. Life-Member, IIM Calcutta
2. Reviewer, Technical Journals and Conferences of ASME, ASM, TMS and Elsevier Science