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Working as a Research Scientist at Centre for Engineered Coatings at International Advanced Research Centre for Powder Metallurgy and New Materials (ARCI), Hyderabad founded by Department of Science and Technology, Government of India.

EDUCATION:

Ph.D.: IIT Kanpur (Materials and Metallurgical Engineering)

M.Tech: IIT Kanpur (Materials and Metallurgical Engineering)

B.Tech: NIT Warangal (REC W)(Metallurgical Engineering)

RESEARCH EXPERIENCE:

Research Scientist at ARCI, Hyderabad from November 2003

PRIMARY RESEARCH AREAS:

- ❖ Development of wear and corrosion resistance coatings by thermal spray techniques-detonation spray and high velocity air-fuel spray systems
- ❖ Technology development - design, fabrication and demonstration
- ❖ Processing-microstructure-property correlation studies of thermal sprayed coatings
- ❖ Coating performance studies under severe wear conditions like sliding, abrasion and erosion
- ❖ Mapping of mechanical properties of bulk as well as coatings at small length scales using nano-indentation technique
- ❖ Creep behaviour of ODS steels and high temperature materials

BOOK CHAPTERS:

1. **P Suresh Babu**, D. Srinivasa Rao, L. Rama Krishna, Arvind Agarwal, G. Sundararajan, *Thermal Spray Coatings for Protecting Al alloys*, In book: Encyclopedia of Aluminum and Its Alloys, Publisher: Taylor & Francis, Editors: George E. Totten, Olaf Kessler, Murat Tiryakioglu, ISBN-9781466510807, November 16, 2018.
2. L. Rama Krishna, **P Suresh Babu**, Manish Tak, D. Srinivasa Rao, G. Padmanabham and G. Sundararajan, *Processing of Ceramic and Cermet Coatings for Aerospace and Strategic Applications, in Handbook of Advanced Ceramics and Composites Applications*, Ed: Yashwant R Mahajan and Roy Johnson, ISBN: 9783030163464, Springer Nature, October ,2020, pp 1465-1526

PATENTS:

Indian patent filed on “Automated spray coating deposition system”
Application No.: 202241037966, 1st July 2022

PUBLICATIONS:

- Rahul Jude Alroy, M. Kamaraj, D. Vijaya Lakshmi, K. Praveen, **P Suresh Babu**, G. Sivakumar, Tailoring microstructural features of Cr₃C₂-25NiCr coatings through diverse spray variants and understanding the high-temperature erosion behavior, Tribology International, Volume 188 (2023) 108810
- N Purushotham, K Santhy, **P Suresh Babu**, G Sivakumar, B Rajasekaran, In Situ High-Temperature X-ray Diffraction Study on Atmospheric Plasma and Detonation Sprayed Ni-5 wt.%Al Coatings. J Therm Spray Tech (2023). <https://doi.org/10.1007/s11666-023-01627-w>
- N Purushotham, NL Parthasarathi, **P Suresh Babu**, G Sivakumar, B Rajasekaran, High temperature sliding wear behavior of detonation sprayed Ni-5wt%Al coating, Wear, Volumes 530–531, (2023) 205030.
- N Purushotham, NL Parthasarathi, **P Suresh Babu**, G Sivakumar, B Rajasekaran, Effect of thermal expansion on the high temperature wear resistance of Ni-20% Cr detonation spray coating on IN718 substrate, Surface and Coatings Technology, Volume 462 (2023) 129490.
- D Vijaya Lakshmi, **P Suresh Babu**, RJ Alroy, GS Kumar, M Prasad, Performance Evaluation of Thin Cermet Coatings Produced by HVOF Spray: A New Approach for Hard Chrome Replacement, J Therm Spray Tech , 32 (2023) 904-917
- D Vijaya Lakshmi, **P Suresh Babu**, L Rama Krishna, P Vijaya Durga, R Vijay, D Srinivasa Rao, Electrochemical corrosion and solid particle erosion response of Y₂O₃ dispersed FeAl coatings deposited by detonation spray, Intermetallics, 155 (2023) 107844

- NM Chavan, P Pant, G Sundararajan, **P Suresh Babu**, Post treatment of cold sprayed coatings using high-energy infrared radiation: First comprehensive study on structure-property correlation, *Surface and Coatings Technology* 448 (2022) 128902
- **P Suresh Babu**, L Venkatesh, A Jyothirmayi, K Suresh, L Rama Krishna, Arvind Agarwal, D Srinivasa rao, Salt Spray (Fog) Corrosion Behavior of Cold-Sprayed Aluminum Amorphous/Nanocrystalline Alloy Coating, *J Therm Spray Tech* 31 (2022) 1173–1183.
- Harish Kumar Adigilli, Kolan Madhav Reddy, Yixuan Hu, Rajamallu Karre, P.V.V. Srinivas, K. Guruvidyathri, Anirudha Karati, V.S. Hariharan, **P Suresh Babu**, A.K. Pandey, Joydip Joardar “The First report on formation of Al-W-Cu grain boundary phase and its influence on mechanical behavior of 2D-WS₂ reinforced Al-4Cu alloy matrix composites” *J Alloys and Compounds*, 883 (2021) 160792.
- S.Kumar, Bolla Reddy Bodapati, Gidla Vinay, K Vamshi Kumar, Naveen Manhar Chavan, **P Suresh Babu**, A. Jyothirmayi, Estimation of inter-splat bonding and its effect on functional properties of cold sprayed coatings, *Surface and Coatings Technology*, Volume 420 (2021) 127318.
- Vijaya Lakshmi, **P. Suresh Babu**, L. Rama Krishna et al., Corrosion and erosion behavior of iron aluminide (FeAl(Cr)) coating deposited by detonation spray technique, *Advanced Powder Technology* 32(7), (2021) 2192-2201.
- Sravan Kumar Thimmappa, Brahma Raju Golla, **P Suresh Babu**, Bhanu Prasad VV, Nanoindentation and high temperature oxidation behavior of ZrB₂-20SiC-(0–10 wt.%)Ta UHTCs, *Ceramics International*, 47 (2021) 22184 – 22190.
- **P Suresh Babu**, Y. Madhavi, L. Rama Krishna, G. Sivakumar, D. Srinivasa Rao, G. Padmanabham, Thermal Spray Coatings for Erosion-Corrosion Resistant Applications, *Trans.IIM* 73(9) 2020, 2141-2159.
- A. Sai Jagadeeswar, S. Kumar, B.Venkataraman, **P Suresh Babu**, A. Jyothirmayi, “Effect of thermal energy on the deposition behaviour, wear and corrosion resistance of cold sprayed Ni-WC cermet coatings”, *Surf. Coat. Technol.* 399 (2020) 126138.
- Rajesh Jarugula, **P Suresh Babu**, S. Ganesh Sundara Raman, G. Sundararajan, “Creep deformation behavior of nano oxide dispersion strengthened Fe-18Cr ferritic steel”, *Materialia*, 12 (2020) 100788,
- Mahammad Ali Shaik, Brahma Raju Golla, **P Suresh Babu**, Processing and characterization of extremely hard and strong Cu-(0-15wt pct)Al alloys, *Met. Mater. Trans. A*, 51 (2020) 708-724
- **P Suresh Babu**, L. Venkatesh, D. Srinivasa Rao, N. Ravi, Fracture behaviour of nc-TiAlN/a-Si₃N₄ nanocomposite coatings under cyclic nano impact testing. *Surface Engineering* 36(7) (2020) 671-679.
- L Rama Krishna, Y Madhavi, **P Suresh Babu**, D Srinivasa Rao, G Padmanabham, Strategies for corrosion protection of non-ferrous metals and alloys through surface engineering, *Materials Today: Proceedings* 15, 145-154 (2019) (18-19)

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- **P Suresh Babu**, Y. Madhavi, L. Rama Krishna, D. Srinivasa Rao, G. Padmanabham, “Thermally-sprayed WC-based cermet coatings for corrosion resistance applications”, JOM, 70 (2018) 2636-2649.
- **P Suresh Babu**, P. Chanikya Rao, A. Jyothirmayi, P. Sudharshan Phani, L. Rama Krishana, D. Srinivasa Rao, “ Evaluation of microstructure, property and performance of detonation sprayed WC-(W,Cr)₂C-Ni coatings”, Surf. Coat. Technol. 335 (2018) 345-354.
- **P Suresh Babu**, D. Sen, A. Jyothirmayi, L. Rama Krishana, D. Srinivasa Rao, ‘Influence of microstructure on the wear and corrosion behavior of detonation sprayed Cr₂O₃-Al₂O₃ and plasma sprayed Cr₂O₃ coatings”, Ceram. Int. 44 (2018) 2351-2357.
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NATIONAL/INTERNATIONAL SYMPOSIUMS/CONFERENCES:

- **P Suresh Babu**, M Susmitha Srikantha, V Krishna, P Sudharshan Phani, and L Rama Krishna, Influence of substrate properties on cyclic impact response of CA-PVD TiN thin films, 7th International Indentation Workshop (IIW-7), University of Hyderabad, December 17-21, 2023
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- P Manojkumar, B Kalyani, K Praveen, **P Suresh Babu**, G Sivakumar, The influence of ceramic additives on the sliding wear performance of plasma-sprayed Cr₂O₃ composite coating, Asian Thermal Spray Conference and Expo 2023, November 2-4, 2023, IIT Madras, Chennai, India
- D Vijaya Lakshmi, **P Suresh Babu**, G Sivakumar, M.J.N.V. Prasad, Effect of fine particle size and microstructure on the erosion and nano-impact behaviour of HVOF sprayed WC Co Cr coatings, Asian Thermal Spray Conference and Expo 2023, November 2-4, 2023, IIT Madras, Chennai, India
- Invited Talk, P Suresh Babu, Mechanical properties and testing of Materials, Refresher Course on Materials Science UGC-Human resources development centre, Osmania University, Hyderabad, 1-16 September 2023
- *Invited Talk*, **P Suresh Babu**, Nanoindentation: Principles, Applications and Case Studies, Synergistic Training program Utilizing the Scientific and Technological Infrastructure (STUTI) (DST) at GRIET in Collaboration with GITAM University, Visakhapatnam Hyderabad, 22-28 August 2022
- *Invited Talk*, **P Suresh Babu**, Influence of Substrate Properties on the Deformation behaviour of TiN Coating under Cyclic Impact Testing, Micro Materials Users Meeting, January, 2022
- **P Suresh Babu**, Babish Chary, L Rama Krishna, D Srinivasa Rao and G Padmanabham, Influence of phase proportions on the tribological performance of Al₂O₃-TiO₂ ceramic composite coatings deposited by detonation spray technique, 6th Asian Conference on Heat Treatment and Surface Engineering, 5-7 March, 2020
- **P Suresh Babu**, National Conference on Advanced Ultra Super Critical Technology, AUSC-2019, 30-31 October, 2019, Hyderabad, India
- **P Suresh Babu**, 1st International conference on “Applied Mechanical Engineering Research” (IC-AMER 2019) on the eve of Diamond Jubilee celebrations of NIT Warangal, 2-4 May, 2019, NIT Warangal, India
- **P Suresh Babu**, M. Sushmita Srikantha, V. Krishna, L. Venkatesh, G. Ravichandra, D Srinivasa Rao, “Influence of substrate properties on the deformation behavior of TiN coatings under cyclic impact testing”, at 2nd International Conference on Structural

- Integrity and Exhibition (SICE 2018) July 25-27, 2018, Hyderabad India
- J. Rajesh, **P Suresh Babu**, R. Vijay, S. Ganesh Sundara Raman, G. Sundararajan, "Creep behavior of n- ODS-18Cr steel", 14th International Conf. on Creep and Fracture of Eng. Maters. and Structures, June 18-22, 2017,Ural, Saint Peterburg, Russia.
 - **P Suresh Babu**, N Ravi, L Venkatesh, D. Srinivasa Rao, Fracture resistance behavior of TiN and nc-TiAlN/a-Si₃N₄ nano-composite mono and multilayer coatings under cyclic impact test using cube-corner indenter, 1st Int. Conf on Coatings, Thin Films, Multilayer Devices & Systems, NFTDC, Hyd, 14-16 Dec. 2016
 - **P Suresh Babu**, L Rama Krishna, D Srinivasa Rao, Thermal sprayed nanostructured coatings-An over view, 4th Int Conf on Advances in Materials& Materials Processing, IIT Kharagpur, 5-7 Nov2016.
 - J Rajesh, **P Suresh Babu**, R. Vijay, S Ganesh Sundara Raman, G Sundararajan, Creep deformation and fracture behavior of ODS-18 Cr Steel", CF-7-2016, International conference on creep, fatigue and creep-fatigue interaction, IGCAR, Kapakkam, 19-22 January, 2016.
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 - **P Suresh Babu**, Debrupa Lahiri, G. Sundararajan, Arvind Agarwal, "Scratch Induced Deformation Mechanisms in Al-Amorphous Alloy Coating", TMS 2013, March 3-7, San Antonio, Texas, USA
 - Bolla Reddy, **P Suresh Babu**, B. Srivatsava, G. Sundararajan, "Indentation Behavior of Cold Sprayed Copper Coating with Spherical Indenter", Mechanical Behavior of Metals Work Shop, December, 2012, New Delhi, India
 - G Sundararajan, **P Suresh Babu**, "Structure and Properties of Detonation Sprayed Conventional and Nano-Structured WC-12Co coatings", MS&T, 2012, October 7-11, Pittsburg, PA, USA.
 - **P Suresh Babu** G Sundararajan "Microstructure, mechanical and tribological properties of detonation sprayed WC-12Co coatings", NMD-ATM -2011, November 13-16, 2011
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