

CV-S.Sudhakara Sarma

Name: Mr.S.Sudhakara sarma

Position: Scientist 'E'

Contact details:

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Education: Bachelor of Engineering in Mechanical Engineering from College of Engineering from Osmania University and Master of Technology in Mechanical Engineering from JNTU Hyderabad.

Research Interests:

Cryo-milling of powders, Nano boron, Nanoboron nitrides, Nanofibers, Powder metallurgy, ODS materials, Heat transfer, Mechanical milling, Hot extrusion, translational research on powder metallurgy, and nanomaterials synthesis and applications.

Patents:

1. Processing powders of a refractory metal-based alloy for high-densification, Sudhakara Sarma Sreedhara, Ranganathan Sundareshan, US2009/0068055A1.
2. Filed the Patent application No: 201911025690 dated 27/06/2019 titled "Process for producing the nano boron by cryo milling," * S.Sudhakara sarma, R.Vijay, T.N.Rao.
3. Filed the Patent application No: 202011044124 dated 09/10/2020 titled "Oxide dispersion strengthened Iron Aluminides for high strength and ductility and method of preparation," Pothula Vijaya Durga, Sreedhara Sudhakara Sarma, Konduri Satya Prasad, Aramadaka Venu Gopal Reddy, Ravula Vijay.

Publications:

1. * S.Sudhakara Sarma, Joudip Joardar, R.Vijay, T.N.Rao, " preparation and characterization of nano boron by cryo milling" * Advanced Powder Technology, Vol 31, 2020, P 3824-3832.
2. *S Sudhakara Sarma, Satya Prasad, Joydip Joardar, K. Suresh, A.V.Reddy, R Vijay "Nanocrystalline ODS Iron aluminide by cryo milling: consolidation, microstructure and mechanical behavior" Materials Research Express, vol 6, Issue 10,2019.
3. Tejasvi Pakki, Sudhakara sarma, Neha Y Hebalkar, Srinivasan anandan, Krishna Mohan M, T.N.Rao "Enhanced Electrochemical Performance of Electrospun SiO₂Nanofibers as Binder-free Anode" Chemistry letters, no 7, vol 46, 2017, P1007-1009.

4. *S.Sudhakara sarma, "Fabrication of Compound Nanofibers for Antibacterial application in filtration" International Journal of Emerging Technology and Advanced Engineering, Volume 4, Issue 5, May 2014, P832.
5. S.B. Chandrasekhar, S.SudhakaraSarma, M.Ramakrishna, P.Suresh Babu, Tata N.Rao, B.P.Kashyap, "Microstructure and properties of hot extruded Cu-1 wt% Al₂O₃ nano-composites synthesized by various techniques" Materials Science&Engineering-A 591,2014, P46-53.
6. R Vijay, M Nagini, S.Sudhakara Sarma, M Ramakrishna, A.V. Reddy, and G Sundararajan "Structure and properties of nanoscale oxide dispersed iron" Metallurgical and Materials Transactions-A, Vol 45, February 2014, P777.
7. *Sudhakara sarma sreedhara, Narasinga Rao Tata, A Novel Method for measurement of porosity in nanofiber mat using the pycnometer, Journal of Engineered Fibers and Fabrics, vol 8, issue 4, 2013, P132-137.

Expertise: Mr. Sudhakara sarma developed few technologies starting from proof of concept at the laboratory scale and demonstration of the technology. He associated with developing technology and the transfer of technology to the Indian industry. Some of his contributions to the interdisciplinary area include the following.

1. **Development of air-stable and hydrocarbon fuel dispersible amorphous nano boron powder for solid rocket motor and air-breathing missile applications:** Mr. Sudhakara sarma is the principal investigator to develop nano boron powder through cryo-milling and thus demonstrating its ability to make air-stable and dispersion stable in JP10 fuel for propulsion applications. He developed and supplied nano boron powder to GTRE, Bangalore.
2. **Development of Chromium-based interconnect material for SOFC:** Mr.Sudhakara sarma played a crucial role in developing the chromium-based interconnect plates through compaction and sintering of the powder-by-powder metallurgy route. He has a US patent in this area. He developed the powder for Interconnect materials and supplied to M/S bloom energy.
3. **Nanofiber coated air filtration medium for automobile industry:** Mr. Sudhakara sarma played an important role in developing the polyamide -6 nanofiber coatings through electrospinning method on Fleet guard filter medium for high-performance filter applications.
4. **9 Chrome ODS steels:** Mr. Sudhakara sarma had contributed to develop ODS steels.
5. **Indigenizing heat pipe based heat sink technology for cooling electronic devices in India:** Mr. Sudhakara sarma played a crucial role in developing/indigenizing heat pipe technology and transferring the technology to the Indian industry. He developed many heat pipe-based devices for heat transfer applications.
6. **Setting up the R& D facilities:** Mr. Sudhakara sarma set up the cryo-milling facility and electrospinning lab at the centre for nanomaterials at ARCI.
7. **Design and fabrication:** Mr. Sudhakara sarma designed and fabricated the hot extrusion facility for developing various steels and composite materials with a maximum operating load of 1150 MPa. He also has a significant contribution to the design and fabrication of the high-energy attrition mill.
8. **Designed and developed products** which include, heat pipe-based solar cooking device, solar grain dryer, heat extraction device for power control cabinet, heat pipe-based bunker heaters, Chromium based interconnect plates for solid oxide fuel cells, nanofiber coated filtration medium for high-performance air filters.

Sponsored projects handled:

1. Development of air-stable and hydrocarbon fuel dispersible amorphous nano boron powder for solid rocket motor and air-breathing missile applications, sponsored by ARDB, DRDO, India.
2. Development of nanofiber coated filtration medium for high-performance air filters, sponsored by Fleet guard filters Pvt. Limited, India.
3. Development of Chromium based interconnect materials for Solid Oxide fuel cells, sponsored by Bloom Energy, India.
4. ODS 9 Cr Steels