Name

Dr. S.Kumar

Designation

Scientist C

Qualification

B.Sc. Physics, M.Sc. Physics, Ph.D. Physics

Experience

October 2004 – June 2005	Junior Research Fellow (JRF) "Plasma Spheroidization: process development and modeling" funded by Department of Atomic Energy (DAE) - Board of Research in Nuclear Science (BRNS), Mumbai
December 2006 – November 2009	Postdoctoral Fellow Neomaterials Hybrid Process Laboratory (National Research Laboratory of Korea for Kinetic Spraying)
November 2009 – Till date	Scientist C Centre for Engineered Coatings, International Advanced Research Centre for Powder Metallurgy and New Materials (ARCI), Hyderabad

Experience in Materials / Processing and Coating Techniques

Cold Spray

1. Metals and Bulk Metallic Glasses Deposition
2. Finite Element Analysis Modeling
3. Microstructure analysis and Bonding Mechanism

Thermal Spray

1. Metal and ceramic powder Spheroidization

2. Intermetallic (aluminides) formation and deposition
3. Nanopowder synthesis through in-flight reaction
4. Anode and interconnect coating for SOFC
5. Wear and Corrosion resistance Metallic glass coating

Technical Expertise

1. Finite Element Analysis Software: ABAQUS
2. Fluid Dynamic Software: Fluent

List of journal publications

1. Formation and characterization of f lame synthesized hexagonal zinc oxide nanorods for gas sensor applications
   P. Kathirvel, J.Chandrasekaran, D.Manoharan, S.Kumar
   Ceramics International 39 (2013) 5321–5325. (2012)

2. Oxidation and Crystallization mechanisms in plasma-sprayed Cu-based bulk metallic glass coatings
   Junghwan Kim, Kicheol kang, Sanghoon Yoon, S.Kumar, Hyuntaek Na, Changhee Lee
   Acta Materialia, 58(3) 952-962. (2010)

3. Bonding features and associated mechanisms in kinetic sprayed titanium coatings
   Gyuyeol Bae, S.Kumar, Sanghoon Yoon, Kicheol Kang, Hyuntaek Na, Hyung-jun Kim, Changhee Lee
   Acta Materialia, 57(19). 5654-5666. (2009)

4. Strain-enhanced nanocryatallization of a CuNiTiZr bulk metallic glass coating by a kinetic spraying process
   Sanghoon Yoon, Gyuyeol Bae, Yuming Xiong, S.Kumar, Kicheol Kang, Jay-Jung Kim, Changhee Lee
   Acta Materialia, 57(20), 6191-6199. (2009)

5. Development of cermet coatings by kinetic spray technology for the application of die-soldering and erosion resistance
   Faisal Farooq Khan, Gyuyeol Bae, Kicheol Kang, S.Kumar, Techo Jeong, Changhee Lee
   Surface and Coatings Technology, 204 (3), 345-352. (2009)

6. Effect of powder state on the deposition behavior and coating development in Kinetic Spray Process
   S.Kumar, G.Bae and C.Lee

Journal of Physics D: Applied Physics, 49, 075305. (2009)

7. Particle states in plasma and their effects on properties of Ni/YSZ spray coatings for SOFC anode application.
   O.Kwon, S.Kumar, S.Park and C.Lee
   Journal of Ceramic Processing Research (Article in press). (2009)

8. Advanced deposition characteristics of kinetic sprayed bronze/diamond composite by tailoring feedstock properties.
   H.Na, G.Bae, S.Shin, S.Kumar, H.Kim and C.Lee
   Composite Science and technology, 69, 463-468. (2009)

9. Spectral inverstigations of chemical bath deposited zinc oxide thin films – ammonia gas sensor.
   P.Kathirvel, S.M.Mohan, D.Manoharan and S.Kumar
   Journal of Optoelectronics and Advanced Materials (Article in press). (2008)

10. Effects of silver addition on mechanical properties of plasma sprayed interconnect layer.
    S.Park, S.Kumar, H.Na and C.Lee
    Journal of Thermal Spray Technology (Article in press). (2008)

11. Deposition characteristics of copper particles on roughened substrates through kinetic spraying
    S.Kumar, Gyuyeol Bae and Changhee Lee
    Applied Surface Science (Article in press). (2008)

12. Phase dependence of Fe based bulk metallic glasses on properties of thermal spray coatings.
    S.Kumar, Junseoub Kim, Hwijun Kim and Changhee Lee
    Journal of Alloys and Compounds (Article in press). (2008)

13. Influence of metal powder shape on drag coefficient in a spray jet
    S.Kumar, Hyuntaek Na, V.Selvarajan, Changhee Lee
    Current Applied Physics (Article in press). (2008)

14. General aspects of interface bonding in kinetic sprayed coatings
    Gyuyeol Bae, Yuming Xiong, S.Kumar and Changhee Lee
    Acta Materialia, 56 (17), 4858 – 4868. (2008)

15. Synthesis and Characterization of Alumina Nano-Powders by Oxidation of Molten Aluminium in a Thermal Plasma Reactor: Comparison with Theoretical Estimation
    S.Kumar, Kicheol Kang, Gyuyeol Bae, V.Selvarajan and Changhee Lee
    Materials Chemistry and Physics Vol. 112, 436 – 441. (2008)

16. Characterization and comparison between APS coatings prepared from ball milled and

plasma processed nickel - aluminium powders.
S.Kumar, V.Selvarajan, P.V.A.Padmanabhan and K.P Sreekumar
Materials Science and Engineering A, Vol. 486 (1-2), 287-294. (2008)

17. Plasma spheroidization of iron powders in a non-transferred DC thermal plasma jet.
S.Kumar and V.Selvarajan
Materials Characterization, Vol. 59 (6), 781-785. (2008)

18. Development and microstructure optimization of atmospheric plasma-sprayed NiO/YSZ anode coatings for SOFCs.
Sooki Kim, Ohchul Kwon, S.Kumar, Yuming Xiong and Changhee Lee
Surface and Coatings Technology, Vol. 202 (14), 3180-3186. (2008)

19. Comparison of solid oxide fuel cell anode coatings prepared from different feedstock powders by atmospheric plasma spray method.
Ohchul Kwon, S.Kumar, Soodong Park and Changhee Lee
Journal of Power Sources, Vol. 171 (2), 441-447. (2007)

20. Formation of Doughnut shaped aluminium particles in a DC non transferred argon thermal plasma jet.
S.Kumar and V.Selvarajan
Vacuum, Vol. 81 (8), 1016-1021. (2007)

21. Spheroidization of Metal and Ceramic Powders in Thermal Plasma Jet: Comparison between Experimental Results and Theoretical Estimation
S.Kumar, V.Selvarajan, P.V.A.Padmanabhan and K.P.Sreekumar
Journal of Materials Processing Technology, Vol. 176 (1-3), 87-94. (2006)

22. In-flight formation and Characterization of Nickel aluminide in a DC thermal plasma jet.
S.Kumar and V.Selvarajan
Chemical Engineering and Processing, Vol. 45 (12), 1029 -1035). (2006)

23. Characterization and comparison between ball milled and plasma processed iron – aluminium thermal spray coatings.
S.Kumar, V.Selvarajan, P.V.A.Padmanabhan and K.P.Sreekumar
Surface and Coatings Technology, Vol. 201 (3-4), 1267 – 1275. (2006)

24. Spheroidization of metal and ceramic powders in thermal plasma jet
S.Kumar and V.Selvarajan
Computational Materials Science, Vol. 36 (4), 451- 456. (2006)

Contact Information

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