BIODATA

Name:SURESH CHANDRA PATNAIK

Designation: Professor in Metallurgical and Materials Engineering

Qualification: Ph.D. in Metallurgical and Materials Engineering, IIT Kharagpur

M.Tech inMetallurgical and Materials Engineering, IIT Kharagpur

B.E. in Metallurgical Engineering, REC Srinagar

Date of Joining the Institute: 29-09-1994

Experience:

Organization	Period		Designation
	From	To	
I.G.I.T., Sarang	21-12-2006	continuing	Professor
I.G.I.T., Sarang	09-03-2000	20-12-2006	Assistant Professor
I.G.I.T., Sarang	29-09-1998	09-03-2000	Sr. Lecturer
I.G.I.T., Sarang	29-09-1994	28-09-1998	Lecturer
RRL, Bhubaneswar	11-03-1994	26-09-1994	Research Associate
IIT, Kharagpur	29-01-1993	31-07-1993	Senior Research Fellow

Area of Research: Composite Materials, Powder Metallurgy, Phase Transformations, Solidification and Casting

PhD Guidance: 01

1. Dr.S.P.Mahapatra "Modeling and study of deformation for continuous casting process applied to Al products"awarded -2014.

M.Tech Guidance: 13

1. Mr.S.K.Sahoo, A Study on the Effect of Austempering Temperature, Time and Copper Addition on the Mechanical Properties of Austempered Ductile Iron, 2012.
2. Mr.D.K.Bag, De-ammonification of Al Dross Produced from Al Smelter Plant, 2014.
3. Mr.M.K.Routray, Removal of Condensed Soluble Tar from Anode Bake Oven Emission, 2014.
4. Mr.D.Pradhan, Dust Dispersion Modeling for Open Cast Mines, 2014.
5. Mr.R.K.Hota, Reduction of Energy Consumption and Wastage in Aluminum Casting Processes, 2015.
6. Mr.P.Praharaj, Beneficiation of Coal by Ultrasonic Processes, 2016.
7. Mr.J.Pradhan, Processing and Reuse Avenues of LD Convertor Slag Produced at Nilachal Ispat Nigam Ltd, 2016.
8. Mr.J.Parida, Wear Study on Plasma Processed LM6 alloy, 2017.
9. Ms.S.Parida, Steam Oxidation of 2.25Cr-1Mn Steel, 2017.
10. Ms.K.Bhoi, A Study on Age Hardening Characteristics of Al-7Si-Mg Alloy, 2017.

11. Mr. G.Prasad, Extraction of Tungsten from W Spent Catalyst, 2018.
12. Ms. Snigdha Priyadarshini, A study on Production of Fe-Ni and Fe-Mn from Manganese nodules, 2019.
13. Mr. Subhra Ranjan Das, Fabrication and Characterization of WC Reinforced AISI-304 Composite, 2019.

AICTE Projects

Chief Coordinator of the AICTE MODROBS project –Advanced Materials Processing and Characterization Laboratory (2001-03). Equipment set up - a computerized UTM and a micro-hardness tester.

List of Publications

1. S.K. Sahoo, S.C.Mishra, B. Sarangi, S.C. Patnaik, J. Majhi, A Literature Review on Al-Si-TiB_2Insitu Metal Matrix Composites, Journal of Materials & Metallurgical Engineering, vol.9(2), (2019), p7-19, ISSN: 2231-3818 (online), ISSN: 2321-4236 (print).
2. J.Parida,S.C.Mishra and S.C.Patnaik, Study on Microstructure and Tribological Properties of Plasma Procesed LM6 Alloy, IOP Conf. Series: Materials Science and Engineering 653 (2019) 012009, IOP Publishing, doi:10.1088/1757-899X/653/1/012009, p1-5.
3. Sandhya Rani Rana, A.B. Pattnaik and S.C. Patnaik, Comparison of wear behaviour and mechanical properties of as-cast Al6082 and Al6082-T6 using statistical analysis, IOP Conf. Series: Materials Science and Engineering 338 (2018) 01 2050, IOP Publishing, doi:10.1088/1757-899X/338/1/012050, p1-6.
4. J. Majhi, S.K. Sahoo, **S.C. Patnaik**, B. Sarangi, A. Behera, Effect of Pouring Temperature in Al-16Si-1%Al_2O_3 Hypereutectic Alloys, International Journal for Scientific Research & Development, Vol.6, Issue 07, 2018, ISSN (online): 2321-0613.
5. Pratik Praharaj, S.C.Patnaik, Archana Mallick, Beneficiation of Coal by Ultrasonic Process, International Journal of Advance and Innovative Research, Volume 5, Issue 4 (XIV): October- December, 2018, p118-123, ISSN: 2394-7780.
6. S.K. Sahoo, J. Majhi, B. Sarangi, **S.C. Patnaik**, J.K. Sahoo, Processing and Characterization of in-situ Al-Si-2TiB2 Composites, Int. J of Scientific & Engineering Research, Volume 9, Issue 4, April-2018, ISSN-2229-5518, pp 177-180.
7. J. Majhi, S.K. Sahoo, **S.C. Patnaik**, B. Sarangi, S.K. Sahu, Effect of addition of 2% Al2O3 for grain refinement of Al-16Si Hypereutectic Alloys at 770°C, Int. J. of Scientific & Engineering Research, Volume 9, Issue 4, April-2018 ISSN: 2229-5518, pp181-184.
8. Jogendra Majhi, Sandeep K. Sahoo, **Suresh C. Patnaik**, Bidyapati Sarangi and Rashmita Mohanty, Oxidation Behaviour of Mo-Si-W Ternary Alloys in the Temperature Range of 400°C-900°C, Int. J. of Adv. Mech. Engg., Vol8, No.1, Spl., (2018),ISSN: 2250-3234, pp 237-244.
9. S.K.Sahoo, J. Majhi, **S.C. Patnaik**, Ajit Behera, J.K. Sahoo and Bhabani P. Sahoo, Characterisation of Al-Si-TiB_2 Insitu Composite Synthesised by Stir Casting Method, Elixir Materials Science, Vol.-113 (2017) 49066-49069, ISSN: 2229-712X.
10. J. Majhi, S.K. Sahoo, **S.C. Patnaik**, B. Sarangi, N.K. Sachan, Effect of alumina on grain refinement of Al-Si hypereutectic alloys, IOP Conf. Series: Materials Science and Engineering, 338 (2018) 01 2048, IOP Publishing, doi:10.1088/1757-899X/338/1/012048, p1-5.
11. P.K.Mallik, P.K.Swain and **S.C.Patnaik**, Characterisation of Suspension Precipitated Nanocrystalline Hydroxyapatite Powders, IOP Conf. Series: Materials Science and Engineering, 115 (2016) 012025, IOP Publishing, doi:10.1088/1757-899X/115/1/012025, p1-4.

12. P.K.Mallik, G.Biswal, **S.C.Patnaik**, S.K.Senapati, Characterisation of Sol-Gel Synthesis of Phase Pure CaTiO3 Nano Powders after Drying, IOP Conf. Series: Materials Science and Engineering 75 (2015) 012005, IOP Publishing doi: 10.1088/1757-899X/75/1/012005, p1-6.

13. S. Pradhan, S. K. Jena, **S. C. Patnaik**, P. K. Swain, J. Majhi, Wear Characteristics of Al-AlN Composites produced in-situ by Nitrogenation, IOP Conf. Series: Materials Science and Engineering 75 (2015) 012034, IOP Publishing doi: 10.1088/1757-899X/75/1/012034, p1-7.

14. **S. C. Patnaik**,P. K. Swain, P. K. Mallik, S. K. Sahoo, Wear Characteristics of Aluminium-Graphite Composites Produced by Stir Casting Technique, Journal of Materials and Metallurgical Engineering, Volume 4, Issue 3, (2014) pp. 13-20. ISSN: 2231-3818 (online), ISSN: 2321-4236 (print).

15. **S.C.Patnaik**,S.Maharana, S.Adak, A.Mishra, A Study on the Sintering Behaviour of Al_2O_3 / Y_2O_3 Doped ZrO_2 Composites, Journal of Polymers & Composites, Vol. 2, 1, (2014) pp.1-8. ISSN: 2321 – 8525.

16. S.K.Sahoo, **S.C.Patnaik**, S.Sen, J.Majhi, An Austempering Study of Ductile Iron and the Effect of Copper Addition on the Tensile Properties of Austempered Ductile Iron, Journal of Materials and Metallurgical Engineering, Volume 3, Issue 2, (2013) pp. 1-7. ISSN: 2231 – 3818, (online), ISSN: 2321-4236 (print).

17. S.P.Mohaptra, S.K.Sahoo, S.Nanda, A.Palchaudhary, **S.C.Patnaik**, Thermo Mechanical Modelling of Bar Casting, Journal of Advanced Research in Mechanical engineering (Vol.1-2010/Iss.3), pp.173-178. ISSN: 1737-9318 (Print). ISSN: 1737-9326 (Online).

18. S.K. Sahoo, B. Sarangi, **S.C. Patnaik**, J. Majhi, J.K. Sahoo, J. Pany, Studies on In-Situ TiB2 Reinforced Al-Si Alloys Synthesized by Stir Casting Method, Proc. of Conference on Equipment & Material for Aluminium Industries (EMAS-2018), p50-55.

19. A.B.Pattnaik, M.Burma,**S.C.Patnaik**, J.P.Behera, N.Khan, B.Sarangi, B.C.Panda, High Density Hematite Concrete as Shielding Material for Waste Management, Proc. of National Seminar on Energy Efficient Steel & Aluminium making Technologies: Research & Applications, 2015.

20. S.P.Mohaptra, S.K.Sahoo, S.Nanda, P.Hembram, A.Palchaudhary, **S.C.Patnaik**, Numerical simulation of aluminium bar casting for wire rod production, Journal of Scientific & Industrial Research, Vol. 69, December 2010, pp. 913-918. ISSN: 0975-1084 (Online); 0022-4456 (Print).

21. S.Maharana, S.Adak, **S.C.Patnaik** and A.Mishra, Sintering Behaviour of Al_2O_3 / Y_2O_3 Doped ZrO_2 Composites, Proceedings of National Conference on Development of Composites, April, 2007, NIT, Rourkela.

22. **S.C.Patnaik** et al, Effect of Zinc Addition on Precipitation Characteristics of Heat Treated Al-Mg Cast Alloys, Experimental Approaches in Pyrometallurgical Research, Allied Publishers Ltd., 2000, pp 228 - 237. ISBN 81-7764-037-2.

23. B.Sarangi, H.S.Ray, **S.C.Patnaik**, A.Sarangi and P.Sarangi, Derivative Differential Thermal Analysis (DDTA): In Kinetic Studies of Aluminothermic Reduction – Experimental Approaches in Pyrometallurgical Research, Allied Publishers Ltd., 2000, pp 55 - 66. ISBN 81-7764-037-2.

24. S.S.Pani, **S.C.Patnaik** and B.Sarangi, A Computer Program for Selection of Hardenable Steels, Proceedings of National Conference on Quality Control in Metallurgical Industries, 1999, Coimbatore, pp137 – 144.

25. R.K.Galgali, S.Bhattacharya, **S.C.Patnaik**, B.Das and S.Prakash, Some Beneficiation and Plasma Smelting Studies of Iron Ore Slimes, Energy Environment and Resource Development for Indian Mineral Industry, (ENRED-95), Allied Publishers, New Delhi, 1995, pp 156 – 163. ISBN 81-7023-425-5.

Conference

26. JagadishParida, Suresh Chandra Pattnaik, Subash Chandra Mishra, Wear behaviour of plasma processed LM6 alloy, ICPCM-2018, NIT, Rourkela.
27. Pratik Praharaj and S C Patnaik, Beneficiation of Coal by Ultrasonic Process, MPT-2018, IIT (ISM) Dhanbad.
28. S.K. Sahoo, J. Majhi, B. Sarangi, **S.C. Patnaik**, J.K. Sahoo, Processing and Characterization of In-situ Al-Si-2TiB2 Composites, TEQIP-III Sponsored National Conference on Emerging Trends in Engineering, Science and Manufacturing (ETESM-2018), 28th and 29th March 2018, Organized by Department of Mechanical Engineering, IGIT, Sarang.
29. J. Majhi, S.K. Sahoo, **S.C. Patnaik**, B. Sarangi,Effect of addition of 2% Al2O3 for grain refinement of Al-16Si Hypereutectic Alloys at 770°C, TEQIP-III Sponsored National Conference on Emerging Trends in Engineering, Science and Manufacturing (ETESM-2018), 28th and 29th March 2018, Organized by Department of Mechanical Engineering, IGIT, Sarang.
30. S. Mallick, P. K. Mallik, **S. C. Patnaik**, Synthesis and Characterization of Calcium Titanate (CaTiO3) reinforced Ultra High Molecular weight Polyethylene (UHMWPE) Bio Composite for Hip and Knee Application, 6th National Conference on Processing and Characterization of Materials (NCPCM2016), Dept. of Metallurgical & Materials Engineering, NIT Rourkela.
31. S. S. Das, S. S. Biswal, **S. C. Patnaik**, P. K. Mallik, Synthesis and Characterization of Al_2O_3- $CaTiO_3$ Nano Composite for Structural Application in Bio Medical Industry, 6th National Conference on Processing and Characterization of Materials (NCPCM2016), Dept. of Metallurgical & Materials Engineering, NIT Rourkela.
32. P.K.Swain, P. K. Mallik, **S. C. Patnaik**, Novel investigation of nano-materials and MgB_2 based conductor: A perspective study, 6th National Conference on Processing and Characterization of Materials (NCPCM2016), Dept. of Metallurgical & Materials Engineering, NIT Rourkela.
33. **Suresh Chandra Patnaik**, Science and Engineering of Materials – Structure Property Relationship, National Seminar on Recent Advances in Materials Technology, 13 January 2015, Bhubaneswar, p82.
34. **Suresh Chandra Patnaik**, Pravat K. Swain, Prafulla Kumar Mallik, Sandeep Kumar Sahoo, Production of Aluminium-Graphite Composites Using Stir Casting Method and their Mechanical Characterization, National Seminar on Recent Advancement in Material Sciences (RAIMS-14), VSSUT, Burla, August 23-24, 2014.
35. Prafulla Kumar Mallik, **Suresh Chandra Patnaik**, Pravat K. Swain, Materials Processing in the Microwave Furnace: A Case Study, National Seminar on Recent Advancement in Material Sciences (RAIMS-14), VSSUT, Burla, August 23-24, 2014.
36. P.K.Mallik, **S.C.Patnaik**, S.K.Sahoo, J.Majhi, A comparative Study on the densification of Spark Plasma Sintered with microwave and conventional sintered Zirconia Ceramics, National Conference on Modern Trends in Engineering Solutions, (NCMTES-2013), 21-22 Dec 2013, IGIT, Sarang.
37. Rishav Chand and **S.C.Patnaik**, Graphene Based Gas Sensors, National Conference on Modern Trends in Engineering Solutions, (NCMTES-2013), 21-22 Dec 2013, IGIT, Sarang.
38. S.K.Sahoo, **S.C.Patnaik**, J.Majhi, Mechanical Properties Enhancement of Ductile Iron by Austempering and Copper Addition, MOMVEA-2013, March 30-31, 2013, IGIT, Sarang.

39. S.K.Sahoo, **S.C.Patnaik**, S.Sen, A Study on the Effect of Austempering Temperature, Time and Copper Addition on the Tensile Properties of Austempered Ductile Iron, Proceedings of National Conference on Emerging Trends & its Applications in Engineering (NCETAE) -2011, 26-28 December, 2011, IGIT, Sarang.

40. J.Majhi, **S.C.Patnaik**, S.K.Sahoo, Isothermal Oxidation Behavior of $MoSi_2$, MOMVEA-2013, March 30-31, 2013, IGIT, Sarang.

41. S.Behera, G.P.Chaudhari, **S.C.Patnaik**, Study of Corrosion Behaviour of Ultra-Fine Grained Steel produced by Severe Plastic deformation, MOMVEA-2013, March 30-31, 2013, IGIT, Sarang.

42. S.Maharana, S.Adak, **S.C.Patnaik** and A.Mishra, Effect of Al_2O_3 Content, Sintering Temperature and Holding Time on Densification Characteristics of Al_2O_3 / 3Y-TZP Composites, National Conference on Development of Composites, April, 2007, NIT, Rourkela.

43. **S.C.Patnaik** et al, Influence of Mg content on the structure and precipitation characteristics of heat treated Al-Mg cast alloy and the effect of addition of Zinc, 57th ATM of IIM, 1999, Kanpur.

44. **S.C.Patnaik**, N.N.Acharya and P.G.Mukunda, Influence of some factors on final properties of Copper-tin-graphite bearings, 20th National P/M Conf. of PMAI, March 3 – 4, 1994, New- Delhi.

45. **S.C.Patnaik**, N.N.Acharya and P.G.Mukunda, A metallographic study of sintering of compacts of copper-tin powder mix, 47th ATM of IIM, Nov. 17 –19, 1993, Hyderabad.

46. **S.C.Patnaik**, N.N.Acharya and P.G.Mukunda, Sintering and dimensional changes in copper-tin-graphite compacts, 17th National P/M Conf. of PMAI, Feb. 28 – March 2, 1991, Trivandrum.

47. **S.C.Patnaik**, N.N.Acharya and P.G.Mukunda, A study on the sintering of copper-tin-graphite compacts, Indo-Soviet Seminar-Exhibition, INSOVEX-1, Jan. 24-25, 1990, New Delhi.

Papers presented/published and delivered talks in AICTE/ TEQIP sponsored Faculty Development Programmes

1. "Structure and Properties of Materials" presented by S.C.Patnaik on 10thJanuary 2020, in TEQIP-III Sponsored Faculty Development Programme on Use of Low Cost Sustainable Construction Materials and Techniques in Civil Engineering Infrastructure Projects (UACMTCE-2020), 6th – 10th January, 2020, Organized by Department of Civil Engineering, IGIT, Sarang.

2. "Engineering Materials- Structure PropertyRelationship" presented by S.C.Patnaikin TEQIP-III Short Term Training Programme on 14th April 2019, in Synthesis, Processing and Characterization of Advanced Materials (SPCAM-2019), 7th – 16stApril 2019, Organized by Department of Metallurgical and Materials Engineering, VSSUT, Burla.

3. "Materials for Advanced Applications" presented by S.C.Patnaik on 28th March 2017, in Short Term Course on Recent Trends in Advance Materials, Mechanical Design and its Application (RTAMMDA-2017), 27th – 31st March 2017, Organized by Department of Mechanical Engineering, IGIT, Sarang.

4. "Smart Materials, Nano-Materials" presented by S.C.Patnaik in Future Challenges in Mechanical Engineering and Management Application (FMEA) January 28-30, 2016, Organized by Department of Mechanical Engineering,IGIT, Sarang.

5. "Science and Engineering of Materials- Material Selection and Microstructure" presented by S.C.Patnaik in AICTE Sponsored FDP onUse of Non-Conventional / Modern Materials in Civil Engineering

Construction Projects, December 2-14, 2013, Organized by Department of Civil Engineering, IGIT, Sarang.

6. "Science and Engineering of Materials- Material Behaviour" presented by S.C.Patnaik in AICTE Sponsored FDP on Use of Non-Conventional / Modern Materials in Civil Engineering Construction Projects, December 2-14, 2013, Organized by Department of Civil Engineering, IGIT, Sarang.
7. "Biomaterials – Principles and Applications" presented by S.C.Patnaik in AICTE Sponsored Staff Development Programmeon Recent Trends in CAD/CAM, Robotics & Mechatronics (RTCRM-2011), 5th to 11th November, 2011, Organized by Department of Mechanical Engineering,IGIT, Sarang.

Curriculum Development

1. Member of the committee for Syllabus revision of B.Tech Syllabus of Metallurgy and Materials Engineering B.Tech of VSSUT, Burla, 2019.
2. Member, Board of Studies and involved in the revision of B.Tech Syllabus of Metallurgical and Materials Engineering of BPUT, 2019.
3. Coordinated the revision of syllabi of UG, PG courses under Autonomy of IGIT, Sarang as per Model Curriculum of AICTE in 2018 as member of syllabus committee.
4. Developed the M.Tech courses of Metallurgical and Materials Engineering, and Industrial Metallurgy specializations of BPUT in 2014 and 2015 respectively and revised the syllabus in 2017 as member of the syllabus committee.
5. Involved in the revision of the B.Tech syllabus of Metallurgical and Materials Engineering of BPUT as a member of the syllabus committee.
6. Involved in the development of the syllabus of Metallurgy and Materials Engineering B.Tech course of VSSUT, Burla as a member of the Board of studies of MME from 2013 to 2016.
7. Revised the Curriculum of the B.Tech, Metallurgical and Materials Engg. course of B.P.U.T. along with other members during 2008-09 to 2011-12 as a member of the Board of studies and Syllabus Committee.
8. Developed the Curriculum of the B.Tech, Steel Technology course as a member (co-coordinator) of the Curriculum Development Sub-Committee for the Steel Technology courses (B.Tech. and post diploma) of BPNSI in 2005-06.
9. Member of the Curriculum Development Committee of the B.Tech, Metallurgical and Materials Engg. course of B.P.U.T. 2003-05 and was a member of the Board of studies.
10. Member of the Syllabus Committeeof the B.E. course in Metallurgical and Materials Engg. of Utkal University in 2001.
11. Member of the Curriculum Development Committee for the Diploma course in Metallurgical Engg. of SCTE & VT in 2002.
12. Developed the Curriculum of a Post Diploma course in Advanced Foundry Technology for the SCTE & VT in 1996.