Biographical sketch

1. **Name** : Dr. Sudip Kumar Samanta
2. **Gender** : Male
3. **Date of Birth** : 19-01-1971
4. **Designation & Affiliation** : Sr. Principal Scientist, Foundry Group, CSIR-CMERI
5. **Postal Address** : Foundry Group, CSIR-Central Mechanical Engineering Research (CSIR-CMERI), Durgapur- 713209, west Bengal
6. **Phone Numbers** : +91-(0) 9434330540
7. **E-mail ID** : sudip@cmeri.res.in

8. **Qualifications** :

S. No.	Degree	Institution	Year
1.	B.E.(Mechanical Engineering)	Bangalore University	1993
2.	M. Tech.(Design & Production Engineering	Burdwan University	1995
3.	Ph.D. (Modelling of injection stage of PIM)	Indian Institute of Technology Kharagpur	2011

9. **Employment Experience**

S. No.	Position and Organisation	Nature of Job	Period
1.	Junior research Fellow, CSIR-CMERI	R&D	Aug.1995-Dec.1996
2.	Scientist B, CSIR-CMERI	R&D	Dec.1996-Dec.2000
3.	JICA Fellow, TNIRI, Sendai, Japan	R&D	Aug,1998-Jun,1999 (Deputation)
4.	Scientist C, CSIR-CMERI	R&D	Jan.2001-Dec.2005
5.	DAAD Fellow, Foundry Instt, RWTH-Aachen, Germany	R&D	Jun,2004-Sep,2005 (Deputation)
6.	Scientist E-I,CSIR-CMERI	R&D	Jan.2006 –Dec.2009
7.	Principal Scientist, CSIR-CMERI	R&D	Jan.2010 – Dec.2014
8.	Sr. Principal Scientist, CSIR-CMERI	R&D	Jan.2015 to till date

10. **Area of specialization**
    - Metal Casting
    - Solidification modelling
    - Powder Injection moulding (PIM)

11. Fellowship Awarded

- JICA Fellowship 1998-1999
- DAAD Fellowship 2004-2005

12. List of Publications

12.1 Journal/book Publications:

1. Piyush Panth, Dipankar Chatterjee, **Sudip Kumar Samanta**, Titas Nandi and Aditya Kumar Lohar, A bottom-up approach to experimentally investigate the deposition of austenitic stainless steel in laser direct metal deposition system, Journal of the Brazilian Society of Mechanical Sciences and Engineering, 42, Article number: 88 (2020), DOIhttps://doi.org/10.1007/s40430-019-2166-0.
2. Argita Das, Shikha Ambastha, Sourav Haldar, **Sudip Samanta**, Nagahanumaiah, A novel methodology for spark gap monitoring in Micro-EDM using optical fiber Bragg grating, IEEE Transactions on Instrumentation and Measurement, PP(99):1-1, September 2019, DOI: 10.1109/TIM.2019.2941291.
3. Piyush Panth, Dipankar Chatterjee, Titas Nandi, **Sudip Kumar Samanta** and Aditya Kumar Lohar, Statistical modelling and optimization of clad characteristics in laser metal deposition of austenitic stainless steel, Journal of the Brazilian Society of Mechanical Sciences and Engineering, 41(7), June 2019, DOI: 10.1007/s40430-019-1784-x.
4. Argita Das, Shikha Ambastha, Sourav Haldar, **Sudip Samanta**, Nagahanumaiah, Fibre bragg grating sensors for measuring spark gap in Micro-EDM in real-time, Manufacturing Technology Today, Vol. 18, No. 7, July 20192019, pp 3-8.
5. Veeresh Nayak Chinnathaypg, Ramesh Motagondanahalli Rangarasaiah, Vijay Desai, **Sudip Kumar Samanta**, S.K., Analysis and Optimization of Metal Injection Moulding Process, Materials Forming, Machining and Post Processing (pp. 41-74), Springer, , 2019 *(Part of the Materials Forming, Machining and Tribology book series (MFMT))*.
6. Veeresh Nayak Chinnathaypg, Ramesh Motagondanahalli Rangarasaiah, Vijay Desai, **Sudip Kumar Samanta**, Evaluation of Wear Behaviour of Metal Injection Moulded Nickel Based Metal Matrix Composite, Silicon, Volume 11, Issue 1, pp 175–185, 2019.
7. Veeresh Nayak Chinnathaypg, Ramesh Motagondanahalli Rangarasaiah, Vijay Desai, **Sudip Kumar Samanta**, Evaluation of Mechanical Properties for Nickel Based Steel Produced by Metal Injection Moulding and Sintered Through Conventional and Microwave Method, CHEMICAL ENGINEERING TRANSACTIONS, VOL. 66, pp 799-804, 2018.
8. Veeresh Nayak Chinnathaypg, Ramesh Motagondanahalli Rangarasaiah, Vijay Desai, **Sudip Kumar Samanta**, Sintering metal injection molding parts of tungsten-based steel using microwave and conventional heating methods, Proceedings of the Institution of Mechanical Engineers Part B Journal of Engineering Manufacture, https://doi.org/10.1177/0954405418816853, 2018.

9. Veeresh Nayak C, M R Ramesh, Vijay Desai, **Sudip Kumar Samanta**, Fabrication of stainless steel based composite by metal injection moulding, Materials Today, Proceedings 5, 6805–6814, 2018.

10. Sujeet Kumar Gautam, Nilrudra Mandal, Himadri Roy, Aditya Kumar Lohar, **Sudip Kumar Samanta**, Goutam Sutradhar, Optimization of processing parameters of cooling slope process for semi-solid casting of ADC 12 Al alloy, Journal of the Brazilian Society of Mechanical Sciences and Engineering, 40:291, 2018.

11. Sk Tanbir Islam, **Sudip Kumar Samanta**, Nagahanumaniah, Himadri Roy, Aditya Kumar Lohar, Santanu Das and Asish Bandyopadhyay, Rheological Behavior of 316L Stainless Steel Feedstock for μ-MIM, Materials Today, Proceedings 5, 8152–8158, 2018.

12. Prosenjit Das, **Sudip K Samanta**, Biswanath Mondal, Pradip Dutta, Multiphase Model of Semisolid Slurry Generation and Isothermal Holding During Cooling Slope Rheoprocessing of A356 Al Alloy, Metallurgical and Materials Transactions B, Volume 49, Issues 295, 1-20, 2018.

13. Himadri Chattopadhyay, **Sudip K. Samanta**, Gautam Biswas and Bharat B. Sharma, Direct numerical simulation of evaporation in a biporous media, Journal of Mechanical Science and Technology, 31 (6) 2635-2641, 2017.

14. Prosenjit Das, **Sudip K. Samanta**, Supriya Bera, Pradip Dutta, Microstructure evolution and rheological behaviour of cooling slope processed Al-Si-Cu-Fe alloy slurry, Metallurgical and Materials Transactions A, Volume 47, Issue 5, pp 2243–2256, 2016.

15. S K Mishra, H Roy, A K Lohar , **S K Samanta** , S Tiwari and K Dutta, A comparative assessment of crystallite size and lattice strain in differently cast A356 aluminium alloy, Materials Science and Engineering, Vol. 75 pp. 01–06, 2015.

16. S. Thadela, B. Mandal, Prosenjit Das, H. Roy, A.K.Lohar and **S. K. Samanta**, Rheological behavior of semi-solid TiB_2 reinforced Al composites, Transactions of Nonferrous Materials Society China, Vol. 25(9), pp. 2827 −2832, 2015.

17. Prosenjit Das, Bijay Kumar Show, Akash Rathore, **Sudip K. Samanta**, Wear behaviour of cooling slope rheocast A356 alloy, Tribology Transactions, Volume 58, Issue 6, pp-1054-1066, 2015.

18. Prosenjit Das, M. Kumar, **S. K. Samanta**, P. Dutta,D. Ghosh, Santosh Kumar, Semi-solid processing of A380 Al alloy using Cooling Slope Study of Microstructure Evolution during Semi-Solid Processing of an in-Situ Al Alloy Composite, Materials and Manufacturing Processes, pp. 356–366, 2015.

19. Prosenjit Das, **Sudip K. Samanta**, Pradip Dutta, Rheological behaviour of Al-7Si-0.3Mg alloy at Mushy state, Metallurgical and Materials Transactions B, DOI: 10.1007/s11663-015-0290-5, 2015.

20. Prosenjit Das, **S. K. Samanta**, P. Kumar, P. Dutta, Phase field simulation of equiaxed microstructure formation during semi-solid processing of A380 Al alloy, Vol. 54,No. 7, pp. 1601–1610, 2014.

21. Prosenjit Das, **S. K. Samanta**, R. Das, P. Dutta, Optimization of degree of sphericity of primary phase during Cooling Slope casting of A356 Al alloy: Taguchi method and Regression analysis, Vol. 55, pp. 605–615, 2014.

22. Prosenjit Das, Samik Dutta, **Sudip K. Samanta**, "Evaluation of primary phase morphology of cooling slope cast Al-Si-Mg alloy samples using image texture analysis" accepted in Proceedings of the Institution of Mechanical Engineers, Part B: Journal of Engineering Manufacture, 2013.

23. Prosenjit Das, **S. K. Samanta**, Himadri Chattopadhyay, Pradip Dutta "Eulerian two-phase flow simulation and experimental validation of semisolid slurry generation process using cooling slope" Material Science & Technology, Vol 29, No.1, 2013, pp 83-92.

24. Prosenjit Das, **Sudip K. Samanta**, Aditya K. Lohar, Himadri Chattopadhyay, Pradip Dutta "Effect of Pouring Temperature on Cooling Channel Semi Solid Slurry Generation process" International Journal of Materials and Mechanics Engineering, Vol. 1, No. 1, January 2012.

25. Prosenjit Das, **S. K. Samanta**, Himadri Chattopadhyay, Pradip Dutta "Effect of Pouring Temperature on Cooling Slope casting of Semi-solid Al-Si-Mg alloy ", Acta Metallurgica Sinica (English Letters), Vol 25, No.5, 2012, pp 329-339.

26. Prosenjit Das, **S. K. Samanta**, Himadri Chattopadhyay, Pradip Dutta "Studies on rheocasting using cooling slope ", Solid State Phenomena, Vol 192-193, 2012 pp 341-346.

27. Prosenjit Das, **S. K. Samanta**, Himadri Chattopadhyay, Pradip Dutta, Nilkanta Barman "Rheological characterization of Semi-solid A356 aluminium alloy ", Solid State Phenomena, Vol 192-193, 2012 pp 329-334.

28. Prosenjit Das, **S. K. Samanta**, Himadri Chattopadhyay, Pradip Dutta, B.R.K Venkatapathi, "Microstructural evolution of A356 Al alloy during flow along a Cooling Slope", Transactions of Indian Institute of Metals, 65(6), Dec 2012, pp 669-672.

29. Prosenjit Das, **S. K. Samanta**, Tapan Ray, B.R.K Venkatapathi, "Mechanical properties and Tensile fracture mechanism of Rheocast A356 Al alloy using Cooling Slope" Advanced Materials Research, Vol. 585, 2012, pp 354-358.

30. **S. K. Samanta**, P. Das and A. K. Lohar, Study of physicalwicks developed by metal injection moulding, Powder Metallurgy, **DOI:** http://dx.doi.org/10.1179/1743290112Y.0000000049, 2013, pp 1-11.

31. **S. K. Samanta**, P. Das, A.K. Lohar, H.Roy and A. K. Chowdhury, "A novel approach of manufacturing nickel wicks for loop heat pipes using metal injection moulding (MIM)", Sadhana (Indian Academy of Sciences), Vol. 38, Part 2, April 2013, pp. 281–296.

32. **S. K. Samanta**, B.B.Sharma, Prosenjit Das, A. K. Lohar, "Development of tubular Ni wick used in LHP for space applications", Frontiers in Heat pipe (FHP) 2 - 043004(2011), DOI: 10.5098/fhp.v2.4.3004.

33. **S.K.Samanta**, H. Chattopadhyay, M.M. Godkhindi, Modelling the powder-binder separation in injection stage of PIM, Progress in Computational Fluid Dynamics, Vo.11,No.5, 2011, pp 292-303.

34. **S.K.Samanta**, H. Chattopadhyay, M.M. Godkhindi, Therm-Physical characterization of binder and feedstock for single and multiphase flow of PIM 316L feedstock, J. of Materials Processing Technology, Vol.2011, Issue 12, 2011, pp 2114-2122.

35. **Sudip K. Samanta**, H. Roy, D. P. Chattopadhyay, S. Kumar, S. S. Roy, A. K. Chowdhury and S. Majumder, Scrap Polymer as a Partial Replacement of Graphite for Cast Iron Production, Indian Foundry Journal-, Vol. 57, No. 1, 2011, Page 23-28.

36. **S.K.Samanta**, H. Chattopadhyay, Boùrn Pustal, Ralf Berger, M.M. Godkhindi, A.B. Polaczek, A Numerical study of solidification in powder injection moulding process, Int. Journal of Heat and Mass Transfer, 51(2008), pp 672-682.

12.2 Conference Paper/Presentations

1. Ravi Kant Jain, Puja Banerjee, Debojyoti Baksi and **Sudip Kumar Samanta**, IoT Based Interface Device for Automatic Molding Machine towards SMART FOUNDRY-2020, 10th International Conference on Computing, Communication and Networking Technologies (ICCCNT), IIT, Kanpur, India, 6-8 July 2019, DOI: 10.1109/ICCCNT45670.2019.8944549.

2. Sujeet Kumar Gautam, Himadri Roy, Aditya Kumar Lohar, **Sudip Kumar Samanta**, Goutam Sutradhar, Optimization of degree of sphericity of ADC 12 Al alloy using taguchi method, International Conference on Sustainable Manufacturing, Automation and Robotics Technologies (IC-SMART 2017), CSIR-CMERI, Durgapur, INDIA, December 15-16, 2017.

3. Sk Tanbir Islama, **Sudip Kumar Samanta**, Aditya Kumar Lohar, Nagahanumaniah and Asish Bandyopadhyay, A Comparative Rheological Study of Alumina Feedstock for micro-PIM, International Conference on Sustainable Manufacturing, Automation and Robotics Technologies (IC-SMART 2017), CSIR-CMERI, Durgapur, INDIA, December 15-16, 2017.

4. P.Pant, D. Chatterjee, **S. K.Samanta**, T. Nandi, A.K.Lohar, Numerical Simulation of Powder Flow and Laser-Substrate Interaction in a Multi-Channel Coaxial Nozzle DMD Process, 65th Indian Foundry Congress, Eco Park, Kolkata, 3-5th February 2017.

5. Himadri Chattopadhyay, **Sudip K. Samanta**, Gautam Biswas and Bharat B. Sharma, Direct Numerical Simulation of Evaporation in a Biporous Media, Joint 18th International Heat Pipe Conference and 12th International Heat Pipe Symposium, Jeju-si, South Korea, 12-16 Jun 2016.

6. P.Pant, D. Chatterjee, **S. K.Samanta**, T. Nandi, A.K.Lohar, Modelling of Powder Stream Dynamics Using Lagrangian-Eulerian Approach in Direct Metal Deposition Process, Proceedings of 6th International and 43rd National Conference on Fluid Mechanics and Fluid Power, Allahabad, Uttar Pradesh, 15th to 17th December 2016.

7. **S.K. Samanta**, P.Das, A.K. Lohar, S.Kumar, D.P. Chattopadhyay, A.K. Chowdhury, Manufacturing of nickel wick for loop heat pipe through MIM route, *2011 International conference on powder metallurgy & particulate material (PowderMet 2011), Sanfrancisco, USA, 18-21^{Ist} May, 2011.*

8. **S.K .Samanta**, P.Das, A.K. Lohar, Development of tubular Ni wick used in LHP for Space applications, *10th International Heat Pipe Symposium, New Taipei City, Taiwan, 6-9 Nov., 2011.*

9. **S.K. Samanta**, P.Das, A.K. Lohar and P. Dutta, Formation of semi solid slurry using cooling slope for rheo-pressure die casting, *accepted for publication in 21st National and 10th ISHMT-ASME Heat and Mass Transfer Conference, Indian Institute of Technology Madras, 27-30 December, 2011.*

10. **S.K .Samanta**, P.Das, A.K. Lohar, A.K.Chowdhury, Metal Injection Moulding-A new P/M route for development of nickel wicks used in LHPs, *The PM-11 International conference and exibition, Pune, India, 3-5th February,2011.*

11. **S.K.Samanta**, H. Chattopadhyay, M.M. Godkhindi, Boùrn Pustal, Ralf Berger, A.B. Polaczek, Simulation of mould filling in Powder Injection Moulding, *19th National & 8th ISHMT-ASME Heat and Mass Transfer Conference, JNTU, Hyderabad, January, 2008.*

12. **S.K.Samanta,** H. Chattopadhyay, M.M. Godkhindi, Modelling of Phase segregation phenomenon in metal injection moulding, *International conference on Investment Casting ,CMERI, January, 2010.*

13. H. Chattopadhyay and **S.K. Samanta,** Transport process in melt spinning of metallic glass ribbon, *Proc. 33rd National Conference on Fluid Mechanics and Fluid Power, Mumbai, December, 2006.*

14. **S.K.Samanta,** H. Chattopadhyay, Metal injection moulding of 304L stainless steel powder, *National Symposium of Investment Casting, Howrah, January, 2006.*

15. B. Sampat Kumar, M.K.Jas, **S.K.Samanta,** D.P. Chattopadhyay, Application of design tools with computer simulation in solving foundry problems-A Case Study, *Conf. on Advance Trends in Manufacturing, Kalyani Engg. College, November, 2003.*

16. M.K.Jas, **S.K.Samanta,** D.P. Chattopadhyay, A.C.Ganguly, Development of process technology and manufacturing of austempered ductile iron components for engineering application, *National Conference on Investment Casting, CMERI, 2003*.

17. M.K.Jas, **S.K.Samanta,** S.Kumar, A.C. Ganguly, Metal casting process optimization through computer simulation, *National conference on Investment Casting, CMERI, 2003*.

18. M.K.Jas, **S.K.Samanta**, D.P. Chattopadhyay, S. Kumar, A.C. Ganguly, A study on the development of Austempered Ductile Iron (ADI) crankshaft for 5 HP agricultural pump engine, *Frontier of Casting and Solidification Technology (FOCAST), IIT- Kharagpur, March, 2003.*

13. Book Chapter

1 C. Veeresh Nayak, G. C. Manjunath Patel, M. R. Ramesh, Vijay Desai and **Sudip Kumar Samanta**, Analysis and Optimization of Metal Injection Moulding Process, Materials Forming, Machining and Post Processing, Springer Publication, 2019, pp 41-74.

14. Thesis Guided:

M. Tech.: 1-Completed
Ph.D. : 1- Completed
3- In progress

15. Technology Transfer

"Process technology for manufacturing of components out of 316L stainless steel powder through metal injection moulding" transferred to ANTICO, Mumbai.

16. Research Projects

S. No	**Title**	**Sponsoring Agency**	**Period**	**Amount** *(Rupees in lakhs)*	**Achievements**
1	Design and development of Mob Control Vehicle (MCV) **(Co-PI)**	CSIR	Oct.2017-March 2020	1900.0	Four prototypes are developed and demonstrated.
2	Sustainable metal casting using advanced research and technology **(PI from CSIR-CMERI)**	DST	August 2016-September 2020.	950.0	First version of the prototype has been demonstrated. Second version with IOT feature is being developed.
3	Preliminary study to develop a fuel housing system for gas turbine engine by melting and solidification of aluminium base alloy **(PI)**	GTRE (DRDO)	Nov. 2017-January 2020	95.0	Five prototypes of fuel housing system consisting of gear pump unit and metering unit have been developed and will be handed over to GTRE.
4	Rheo pressure die casting of ADC-12 Aluminium alloy **(PI)**	Sona Koyo Steering Systems Ltd,Gurgaon	Nov. 2014 to March 2017	26.0	Developed automobile component out of ADC 12 alloy
6	Rheo pressure die casting of nano TiB2 reinforced Al-Mg alloy composite and Mg2Si reinforced Al-Mg alloy composite **(PI)**	CSIR	April 2012-March 2017	100.0	Developed automobile component out of the composites

7	Micro Powder injection moulding of metals and ceramics **(PI)**	CSIR	April 2012-March 2017	250.0	Developed micro-channels and patterns on ceramic and metal base using micro-PIM
8	Facility for rheo pressure die casting **(PI)**	DST & CSIR	Nov.2010-Oct.2013	338.0	Globular grain slurry formation out of A356 aluminium alloy has been completed. The rheo pressure die casting system integration is in progress.
9	Development of porous nickel wick through MIM route **(PI)**	ISRO Satellite Center, Bangalore & CSIR	Nov,2007-Dec,2009	23.60	Around 55% porosity has been achieved in the wick specimen
10	Industrial implementation of processing of 316L stainless steel powder through MIM route **(PI)**	Anticorrosive Equipments Pvt.Ltd (ANTICO), Mumbai	Feb, 2008-March ,2009	7.43	The processing technology has been transferred to ANTICO and commercial production of components have been commenced with indigenous technology first time in India.
11	Standardization of process parameters of metal injection moulding(MIM) for production engineering components **(PI/Co-PI)**	CSIR (Under AMT, 10^{th} Five year Plan)	Jan,2004-March 2007	100.0	Processing technology through MIM have been developed along with a multiphase flow model to simulate the injection stage including an MIM laboratory first of its kind in India
12	Near net shape manufacturing through austempered Ductile	CSIR (Under AMT, 10^{th}	Jan,2004-March	60.0	Process technology for manufacturing of various grades of ADI

	Iron(ADI route **(CO-PI)**	Five year Plan)	2007		have been developed
13	Development of process technology and manufacturing of austempered ductile iron components for engineering application **(Co-PI)**	DST & CSIR	July,2003-March ,2008	12.0	Process technology for manufacturing of wear resistant ADI components such as Beater Head and Swing hammer for mining machineries
14	Development of ADI crankshaft for 35 HP three cylinder Sonalika Tractor Engine **(Co-PI)**	International Tractor Ltd, Hoshiarpur	July, 2003-Dec, 2009	7.0	35 hp crankshaft has been developed through ADI route
15	Development of 5 hp agricultural pump engine crankshaft **(Co-PI)**	CSIR	Dec, 1999-Nov,2001	2.6	Process technology for manufacturing of 5 hp crankshaft has been established through ADI route

17. Consultancy Projects/Technical Services

S. No	**Title**	**Sponsoring Agency**	**Period**	**Amount** *(Rupees in Lakhs)*
1	Development of semi-automatic machine and fixtures for machining of surgical forceprs **(PI)**	Baruipur Surgical Cluster, Durgapur	June 2017 to February 2020	15.0
2	Mechanized system to replace tuyere stock assembly **(PI)**	Durgapur Steel Plant	Nov, 2009 – Oct, 2011	38.0
3	Cast ADI gear **(Member)**	McNally Bharat, Kumardubi	April,2008-March, 2010	1.2
4	Layout design of ADI Foundry **(Co-PI)**	Manish Metal, Jamshedpur	April, 2007-March, 2008	0.8
5	Casting of S.G.roller **(Member)**	S.D. Foundry, Durgapur	April, 2001-march, 2002	0.176
6	Development of Brake Bloke assembly **(Member)**	STPS, Santhaldih	April 1998-March 1999	1.65
7	Casting of Delivery guide **(Member)**	S.D. Foundry, Durgapur	April, 1997-March, 1998	0.405