Biodata of the Investigator(s)

1. Personal Details

Name: Dr. Sasikumar Chandrabalan

Date of Birth (dd/mm/yyyy): 20.05.1978

Present Position and Organization: Assistant Professor,
Department of Materials and Metallurgical Engineering, Maulana Azad National Institute of Technology (An Institute of National Importance)
Bhopal, Madhya Pradesh-462003, India
Mobile : +91 8989005394
Email: c.sasikumar.manit@nic.in, sasikumarc@manit.ac.in , csasimv@gmail.com

2. Educational Qualifications

Degree	Institution conferring the degree	Subject/Discipline	Year
B.E.	PSG College of Technology, Bharathiyar University, Coimbatore, Tamil Nadu	Metallurgical Engineering	1999
Ph.D. (Direct Ph.D. based on the research experience at CSIR -NML)	IIT BHU, Varanasi	Metallurgical Engineering	2009

3. Past Experience in the field of research & industry

Duration	Institution	Name of work done
Aug. 1999- Nov.2000	Ennore Foundries	Trainee Engineer
Dec. 2000 – Dec. 2002	CSIR-NML, Chennai Centre	Project Assistant
Jan. 2002 – Dec. 2009	CSIR-NML, Chennai Centre	Research Fellow
Jan.2010- July 2010	CSIR-NML, Jamshedpur	Scientist Fellow
July 2010 to Till Date	MANIT Bhopal,M.P., India	Assistant Professor

No of Ph.D. thesis Guided : 05 awarded + 02 ongoing
No of M.Tech. thesis Guided : more than 45
No of B.Tech. Projects Guided : More than 50

4. Number of research projects handled

Ongoing Projects

1) ***Project Title:*** *"Process optimization using indigenously developed plasma assisted photo-catalytic reactor and regeneration of catalysts",*
Sponsoring Agency: *ONGC Energy Centre, New Delhi* ***Principal Investigator:*** *Dr. S. Suresh* ***Co-Project Investigator:*** *Dr. C. Sasikumar ,****Budget:*** *Rs* ***10.63 L***

2) ***Project Title:*** *Analysis and Investigation of Indian Climate Atmospheric Effect on Corrosion of Galvanized Steel Sheets,*
Sponsoring Agency : *Panasonic India Pvt Ltd., Gurgaon, Haryana -122002,* ***Principal Investigator:****Dr. S. Sanjay Srivastava* ***Co-Project Investigators:****Dr. C. Sasikumar* ***Budget:****30.5 L*

3) ***Project Title:*** High Temperature Materials for Thermal Protection Systems,
Sponsoring Agency: MHRD & DST under IMPRINT –II
This project is in collaboration with IIT Kanpur, IIT Patna
Principal Investigator: *Prof.. Kantesh Balani Co-PI : Dr C Sasikumar*

4) ***Project Title:*** Design and Development of Ultrasonic Transducer
Sponsoring Agency: ISRO under Yukthi Sanchita
This project is in collaboration with Chemical Engineering Dept.
Principal Investigator: *Dr Bharat Kr. Modhera Co-PI : Dr C Sasikumar*

Projects Completed

5) **Project Title:** Mechano-chemical leaching studies of studies of Cu slag in sea water
Sponsoring Agency: Consultancy project for M/S Sterlite India (p) Ltd.
Investigators: *C Sasikumar, Dr S Srikanth Duration: 2008-2009*

6) **Project Title:** Mechanical Activation and Leaching of Indian Beach Sand Ilmenite
Sponsoring Agency: in-house project at CSIR-NML
Investigators: *C Sasikumar, Dr. D S Rao, Dr S Srikanth Duration: 2002-2007* ***Budget:****N.A.*

7) **Project Title:** Failure analysis of Steel Wire Ropes used for Lifting Goods and Materials
Sponsoring Agency: Consultancy project for M/s AVGOL India Pvt. Ltd.
Investigators:*, Dr C Sasikumar, Dr S Das Duration: 2019-2020*

8) **Project Title:** Root cause analysis of premature failure of NHT Trim Condenser
Sponsoring Agency: Consultancy project for M/s BORL, INDIA.
Investigators:*, Dr C Sasikumar, Dr S Das Duration: 2017-2018.*

9) **Project Title:** Failure analysis of Tie bar used in plastic injection moulding machine
Sponsoring Agency: Consultancy project for L&T Demag Chennai, INDIA
Investigators:*, Dr S Srikanth, C Sasikumar Duration: 2007-2008*

10) **Project Title:** Failure analysis of super heater boiler tube
Sponsoring Agency: Consultancy project for M/S Hindustan Zinc Limited, INDIA

***Investigators:**, Dr S Srikanth, C Sasikumar Duration: 2007-2008*

11) **Project Title:** Failure analysis of super heater boiler tube
Sponsoring Agency: Consultancy project for M/S Neiveli Lignite Corporation, INDIA.
***Investigators:**, Dr S Srikanth, C Sasikumar Duration: 2005-2006*

12) **Project Title:** Failure analysis of super heater boiler tube
Sponsoring Agency: Consultancy project for M/S TTPS ltd, Tamilnadu, INDIA.
***Investigators:**, Dr S Srikanth, C Sasikumar Duration: 2004-2005*

13) **Project Title:** Failure analysis of super heater boiler tube
Sponsoring Agency: Consultancy project for M/S Alstom India (p) ltd, INDIA.
***Investigators:**, Dr S Srikanth, C Sasikumar Duration: 2002-2003*

14) **Project Title:** Kinetic studies of sugarcane bagasse used for cogeneration of green power
Sponsoring Agency: Consultancy project for M/s Murugappa Group, E.I.D Parry,Tamil Nadu, India
***Investigators:** Dr S Srikanth, C Sasikumar, Duration: 2004-2006.*

15) **Project Title:** Kinetic studies of Groundnut Shells used for cogeneration of green power
Sponsoring Agency: Consultancy project for M/s Murugappa Group, E.I.D Parry,Tamil Nadu, India
***Investigators:** Dr S Srikanth, C Sasikumar, Duration: 2004-2006.*

16) **Project Title:** Surface modification of carbon and alloy steels using Boronizing technology
Sponsoring Agency: In-house project at CSIR-NML, Tamil Nadu, India
***Investigators:** Dr Gopala Krishna, C Sasikumar, Duration: 2000-2001*

5. **Potential application of research findings of other research projects handled by theinvestigator(s) in the past**

We have developed only lab scale conversion/processing technologies for the following. Efforts are being continued to go for pilot scale conversion/patent

1. Plasma assisted photo-catalytic conversion of CO_2 into CO
2. Room Temperature Case Carburization of Steel using Surface Mechano-chemical Process
3. Microwave reduction of Iron Ore and alternate method for DRI production
4. Rapid Sintering of Metal Powders
5. Carbon films and nanostructures for super capacitors
6. Development of Piezoelectric Materials for Transducers
7. Carbon films for Thermal Management in PCBs

8. **Papers published (India / Abroad) by the Investigators, etc.**

	TITLE	CITED BY	YEAR
[1].	Effect of mechanical activation on the kinetics of sulfuric acid leaching of beach	124	2004

	sand ilmenite from Orissa, India C Sasikumar, DS Rao, S Srikanth, B Ravikumar, NK Mukhopadhyay, ... Hydrometallurgy 75 (1-4), 189-204		
[2].	Dissolution studies of mechanically activated Manavalakurichi ilmenite with HCl and H2SO4 C Sasikumar, DS Rao, S Srikanth, NK Mukhopadhyay, SP Mehrotra Hydrometallurgy 88 (1-4), 154-169	79	2007
[3].	Analysis of premature failure of a tie bar in an injection molding machine C Sasikumar, S Srikanth, SK Das Engineering Failure Analysis 13 (8), 1246-1259	30	2006
[4].	Electrodeposition of nanostructured ZnO thin film: a review M Kumar, C Sasikumar Am. J. Mater. Sci. Eng 2 (2), 18-23	28	2014
[5].	Energetics of mechanical activation–Application to ilmenite C Sasikumar, S Srikanth, NK Mukhopadhyay, SP Mehrotra Minerals Engineering 22 (6), 572-574	26	2009
[6].	Analysis of mechanically induced reactivity of boehmite using kinetics of boehmite to γ-Al_2O_3 transformation T. C. Alex, C. Sasikumar, Ansu J. Kailath, Rakesh Kumar Metallurgical Transactions B 42 (3), 592-603	16	2011
[7].	Development of hierarchical layered nanostructured α-MoO3 thin films using dc magnetron sputtering Saurabh Daya, C Sasikumar Mater. Res. Express 3 (2016) 106405 3 (106405)	11	2016
[8].	Experimental and Mathematical Analysis of Simulation Results for Sheet Metal Parts in Deep Drawing CS Ajay Kumar Choubey, Geeta Agnihotri Journal of Mechanical Science and Technology	10	2017
[9].	A novel method for development of hard nano crystalline surface through SMAT and mechanical alloying JN Sahu, C Sasikumar Materials Today: Proceedings 3 (6), 1968-1976	10	2016
[10].	Microstructures and mechanical properties of Al-Si-Mg-Ti/egg shell particulate composites S Shamim, H Singh, C Sasikumar, DK Yadav Materials Today: Proceedings 4 (2), 2887-2892	9	2017
[11].	Failure of evaporator tubes initiated by lamellar tearing during the commissioning of a waste heat recovery boiler S Srikanth, SK Das, C Sasikumar, B Ravikumar	9	2007

	Engineering Failure Analysis 14 (1), 262-278		
[12].	Analysis of die angle in deep drawing process using FEM AK Choubey, G Agnihotri, C Sasikumar, M Singh Materials Today: Proceedings 4 (2), 2511-2515	8	2017
[13].	Formability analysis of aluminium alloy by Erichsen cupping test method M Singh, AK Choubey, C Sasikumar Materials Today: Proceedings 4 (2), 805-810	7	2017
[14].	Surface nano-crystallizationof AISI 304 stainless steel through shot peening technique P Tadge, PK Gupta, C Sasikumar Materials Today: Proceedings 2 (4-5), 3245-3250	7	2015
[15].	Effect of vanadium addition to Al-Si alloy on its mechanical, tribological and microstructure properties A Kumar, C Sasikumar Materials Today: Proceedings 4 (2), 307-313	6	2017
[16].	Numerical validation of experimental result in deep-drawing AK Choubey, G Agnihotri, C Sasikumar Materials Today: Proceedings 2 (4-5), 1951-1958	6	2015
[17].	Effect of Natural Weathering and Mechanical Activation on the Acid Dissolution Kinetics of Indian Beach Sand Ilmenites C Sasikumar, DS Rao, S Srikanth, BRV Narashimhan, B Ravikumar, ... Metals Materials and Processes 18 (3/4), 211	5	2006
[18].	Development of hard and wear resistant surface coating on Ni-Cr-Mo steel by surface mechano-chemical carburization treatment (SMCT) JN Sahu, C Sasikumar Journal of Materials Processing Technology 263, 285-295	4	2019
[19].	Improvements in Mechanical Properties of Spring Steel through Surface Tempering and Hardening Assisted by SMAT P Tadge, C Sasikumar Transactions of the Indian Institute of Metals 71 (6), 1543-1552	4	2018
[20].	Mechanical properties of a Ni–Cr–Mo steel subjected to room temperature carburizing using surface mechano-chemical carburizing treatment (SMCT) JN Sahu, C Sasikumar Transactions of the Indian Institute of Metals 71 (4), 915-921	3	2018
[21].	Room temperature case carburizing of a Ni–Cr–Mo steel through shot peening/blasting techniques JN Sahu, C Sasikumar Transactions of the Indian Institute of Metals 68 (2), 227-233	3	2015

[22].	Where does the energy go in high energy milling? C Sasikumar, S Srikanth, R Kumar, TC Alex, SP Mehrotra	3	2011
[23].	Galvanostatic deposition of hierarchical layered α-MoO3 thin films and its characterization to study the influence of heat treatment A Sasi, C Sasikumar DIGEST JOURNAL OF NANOMATERIALS AND BIOSTRUCTURES 12 (2), 615-620	2	2017
[24].	Development of ultra-smooth ballas diamond incorporated nano-composite carbon thin films using PECVD technique S Dayal, C Sasikumar, S Srivastava Journal of Materials Science: Materials in Electronics 27 (8), 8188-8196	2	2016
[25].	Effect of Cr on grain refinement and mechanical properties of Al-Si-Mg alloys A Kumar, G Sharma, C Sasikumar, S Shamim, H Singh Applied Mechanics and Materials 789, 95-99	2	2015
[26].	Influence of Variable Blank Holding Pressure on Impeller Sheets in Deep Drawing Process AK Choubey, G Agnihotri, C Sasikumar Transactions of the Indian Institute of Metals 68 (1), 47-51	1	2015
[27].	Low temperature boronizing of surface nanostructured Ni-Cr-Mo steel using SMAT G Sreejith, T Sunny, JN Sahu, C Sasikumar Materials Science Forum 830, 663-666	1	2015
[28].	Electrodeposition of nanostructured Ni based alloys/composites–a critical analysis M Mandal, C Sasikumar Advanced Materials Research 984, 514-519	1	2014
[29].	The effect of mechanical activation on energetics and dissolution kinetics of Indian beach sand ilmenite C Sasikumar IT, Banaras Hindu University Varanasi	1	2009
[30].	Energetics and effects of mechanical activation of materials S Srikanth, C Sasikumar, R Kumar Proc. European Metallurgical Conference (EMC2007), 11-14	1	2007
[31].	Effect of surface mechanical attrition on microstructure and mechanical properties of hypoeuctectoid steel P Tadge, C Sasikumar Indian Journal of Engineering and Materials Sciences (IJEMS) 27 (2), 418-423		2021
[32].	Synthesis And Characterization of Alumina Coating on Steel for High Temperature Oxidation and Wear Applications Muskan, Parul Dengre, Jaya Kaithwas, Sasikumar International Journal of Mechanical and Production Engineering Research and …		2020

[33]. Surface mechano-chemical case carburising treatment (SMCT) of Ni-Cr-Mo steel: a post-annealing and differential scanning calorimetric (DSC) analysis — 2020
JN Sahu, C Sasikumar, KK Saxena
Advances in Materials and Processing Technologies 6 (2), 338-349

[34]. Effect of Anisotropy, Temperature, Strain Rate on Deep Drawing Us-ing Conical Die — 2020
AK Choubey, C Sasikumar
Journal of Metallic Material Research| Volume 3 (01)

[35]. Evaluation of Microstructure due to Addition of Carbon in Ni–Cr–Mo Steel Mechanically Through Surface Mechanochemical Case Carburizing Treatment (SMCT) — 2019
JN Sahu, C Sasikumar
Transactions of the Indian Institute of Metals 72 (1), 55-63

[36]. Formation of Nanostructured Surface Layer Induced by Surface Mechanical Attrition Treatment (SMAT) in Spring Steel — 2018
P Tadge, C Sasikumar, FZ Haque
Materials Focus 7 (6), 784-789

[37]. Well-Ordered α-MoO3 Thin Films Through Galvanostatic Deposition for High Performance Supercapacitors — 2018
A Sasi, C Sasikumar, FZ Haque
Materials Focus 7 (5), 640-644

[38]. Structural Characterization and Mechanical Behavior of Carbon Nanotube-Reinforced Aluminum Matrix Composite—A Review — 2017
S SHAMIM, CS GAURAVSHARMA, VS RAGHUVANSHI
Handbook of Research for Fluid and Solid Mechanics: Theory, Simulation, and …

[39]. Enhanced Antagonistic Bacterial Activity of Meropenem with Bioattuned Nanodriblet against Listeria monocytogeneses — 2016
C Sasikumar, NV Kumar, SJ Mohana, S Yasodha
Research Journal of Pharmacy and Technology 9 (8), 1043

[40]. Effect of SMAT on microstructural and mechanical properties of AA2024 — 2016
P Tadge, C Sasikumar
AIP Conference Proceedings 1728 (1), 020294

[41]. Raman spectroscopic studies of thin film carbon nanostructures deposited using electro deposition technique — 2016
S Dayal, A Sasi, S Jhariya, C Sasikumar
AIP Conference Proceedings 1728 (1), 020302

[42]. Promising Nature of MoO3 Nanostructures in Gas Sensing Applications – A Review — 2016
C Sasikumar, Jaya Bharti, Arshali Sasi
International Journal of Advanced Engineering and Nano Technology (IJAENT) 3)

[43].	Microwave assisted synthesis of nanostructured C/ LiMnPO4 cathode material for Lithium ion batteries CS Sonika Rajput, Rajesh Kumar Pal ICNT 2015	2015
[44].	Development of Ni-Al2O3 composite coating and the effect of plating modes on Microstructure and Tribological Properties C.Sasikumar, Anas Ahmad Siddiqui1* National Conference on Product Design and Manufacturing, NCPDM-2015	2015
[45].	The effect of Intermetallic phases on Ductile to Brittle transition of Aluminium-Iron alloy S Shamim, G Sharma, C Sasikumar Applied Mechanics and Materials 592, 770-775	2014
[46].	Effect of Microwave Sintering on Microstructural And Mechanical Characteristics Of Al-Cu Alloys CS Ashish Philip, Priyanshi Agrawal, Sonika Rajput, Parul Agrawal International Conference on Powder Metallurgy PM-13	2013
[47].	Investigation of microwave heating in iron production C Ostwal, A Garg, P Saptputre, C Sasikumar	2013
[48].	Role of Microwave-Material Interaction on Processing SC Ramit Datta, Arpit Shulka, Pratik Athe ICMARS 2012	2012
[49].	A Critical Evaluation of the Various Kinetic Methods and their Application to Pyrolysis and Combustion to Two Biomass Fuels Bagasse and Groundnutshell S Srikanth, TC Alex, C Sasikumar, SP Mehrotra CSIR-NML	2006
[50].	Enhanced Liberation and Acid Leaching Kinetics of Ilmenite through Mechno-Chemical processing C Sasikumar, S Srikanth, NK Mukhopadhyay, DS Rao, B Ravi Kumar	2006
[51].	Effect of Mechanical Activation on the Leaching Characteristics Of Indian Ilmenite C Sasikumar, S Srikanth, NK Mukhopadhyay	2005