

Siksha Swaroopa Kar

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Public URL: <https://scholar.google.co.in/citations?user=Q1pJgloAAAAJ&hl=en> (to access paper and citation details)

Nationality: Indian

Date of Birth: 8th March 1989

Years of Experience: More than nine years

Core Expertise:

Environment Management in Transport Sector, Sustainable Road Construction Technologies (Recycling; Use of Plastic Waste and industrial waste; Cold Mix and Warm Mix technology), Resource Efficiency, Environmental Impact and Risk Assessment of Highway Projects, Life Cycle Assessment of road infrastructure, Evaluation of Circular Economy in Transport Sector, Capacity building.

Education

Doctor of Philosophy in Engineering Science, 2018, Academy of Scientific and Innovative Research, India

Master of Technology in Material Resource Engineering, 2012, CSIR-Institute of Minerals and Materials Technology, Odisha, India.

Bachelor of Technology, 2010, Indira Gandhi Institute of Technology, Sarang, Odisha, India.

Professional Position held (in the reverse chronological order)

Principal scientist, CSIR-Central Road Research Institute, December 2018 to till date (Merit Promotion)

Senior Scientist, CSIR-Central Road Research Institute, December 2015 to December 2018 (Merit Promotion)

Scientist, CSIR-Central Road Research Institute, March 2013- December 2015

Scientist, CSIR-Institute of Minerals and Materials Technology, December, 2012-March 2013

Quick Hire Scientist Fellow, CSIR-Institute of Minerals and Materials Technology, August 2010- December, 2012

Professional Achievements

- Completed **30 research and consultancy projects** in the capacity of Project leader and Coordinator, funded by Industries, Government ministries and agencies of **worth approx. 400 lakhs.** (Annexure I)
- **Published about 25 papers in International and National Journals; about 35 in International and National Conference Proceedings and 3 Book Chapters** (Annexure II)
- Developed and transferred technologies “Pothole Repair Machine” and “Mobile Cold Mixer cum Paver” under Atmanirbhar Bharath mission and **filed 3 patent application** (Annexure III)
- Guiding doctoral, masters and bachelor’s student for their research work (Annexure IV)
- Delivered more than 50 lectures on “Environmental friendly Solutions in Road Construction”, “New Technologies in Road Construction” “Use of Plastic Road” and “Paving Bitumen and its Properties” in the training programme organized by CSIR-Central Road Research Institute
- Delivered lectures in the CSIR-JIGYASA, Science 101 and Atal Tinkering Lab (ATL) programme for development of young minds towards science and research
- Delivered lectures as invited speaker in Capacity Building Programme organized by academic institutions
- Organized International and national Seminars, Capacity building programme and Stakeholder meetings for dissemination of research outcome in wide forum
- Organized (as representative from Central Road Research Institute) more than 15 Workshop cum Demonstration of “Environmental Friendly Emulsion based Road Construction Practices” along with State Govt Road Agencies & National Rural Infrastructure Development Authority (NRIDA) for disseminations of technology in PAN India Level (2015 to till date)
- Reviewer in International and National Journals/Conferences

Awards & Honors

- **Vishwakarma Awards 2022** (Medal with Certificate) for outstanding contribution in development of Construction Industry by Construction Industry Development Council
- **Fellowship by Earthwatch Institute Collaboration with Green Highways, NHAI** on 'Beat the Plastic Pollution through Innovative Ideas' and 'Greening of Highways' Initiatives. (July 2019 -December2020)
- **Merit promotions** for two successive years in Council of Scientific and Industrial Research (CSIR)
- **SKOCH Award 2019** (Silver Category) for Execution of Project on "Rehabilitation of National Highway by Recycling Asphalt Pavement" (Team Member)
- **CSIR-Technology Award(Platinum Jubilee year, 2017)** for the topic "Sustainable Cold Mix Technology for Construction and Maintenance of Roads" under "Physical Sciences including Engineering" category on 26th September 2017
- **Best Poster Award** at Conference on Sustainable Asphalt Pavement for Developing Countries , CSIR-CRRI, Delhi, 11-12th March 16 for the paper "Improvement of Durability of Hot Mix Asphalt by Chromium Containing Solid Wastes from Leather Industry"
- **Appreciation Certificate and memento**, CSIR-CRRI as "Inventor of Patch Fill- A Solution for Pothole Repair" on Technology Transfer Day of Setu Care and PatchFill, 5th Dec 15
- **SKOCH Order-of-Merit Award 2015** for the project "Development of Application of Technology for Sustainable Transport SUSTRANS"(Team Member)
- **International Travel Grant from Department of Science and Technology in 2014 to present paper** "Bitumen Emulsion based low energy Mild Warm Mixes for Maintenance of Roads" in 5th Regional Conference, SARF/IRF 2014 - "Better Roads Moving Africa", Pretoria, South Africa
- **Quick Hire Scientist (QHS)-Trainee fellowship** under the QHS scheme of the Council of Scientific and Industrial Research (CSIR), India (2010-2012)

Professional Memberships

- Member, Committee on Reduction of Carbon Footprint in Road Construction and Environment, **Indian Roads Congress**: Drafted the guideline on the topic "Guidelines on Reducing Carbon Footprint of Road Projects".
- Member, Committee on Road Asset Management, **Indian Roads Congress**: Working on preparation of document on the topic "State of the Art : Mobile Routine Maintenance Facility".
- Member, Solid Waste Management Sectional Committee, **Bureau of Indian Standard**
- Working Member in subgroup committee "Bitumen Tar and their Products (PCD 6)" **Bureau of Indian Standard**: Working in revising the document 'Bitumen Emulsion for Roads (Cationic Type) Specification (Third Revision) IS:8887 (2018)'
- Life Member, **Indian Roads Congress**
- Life Member, **Indian Geotechnical Society**
- Life Member, **Indian Society of Chemical Engineering**

Participation in Training and Courses

- Completed online course on "Introduction to the World Bank Environmental and Social Framework" through Open Learning Campus, World Bank
- Completed online course on "Municipal Solid Waste Management in Developing Countries" through Coursera
- Completed Short Course on Cold Recycling of Asphalt Pavement, by International Symposium of Asphalt Pavement (ISAP)
- International Course on Dissemination of HDM4, organized by CSIR-CRRI, Delhi, from 26th November to 7th December, 2018
- Induction Training Programme of Scientist, organized by CSIR-HRDC, Ghaziabad, New Delhi, from 27th Jan 2013 to 5th Feb 2013

Annexure I: List of Projects

Research Projects

Sl No	Project Title	Duration	Sponsoring Govt.
<i>As Principal Investigator</i>			
1	Trial section and pavement evaluation of pavement constructed with Ferro-chrome slag as alternative to natural aggregates	2022-2025	M/s Tata Steel Limited
2	Performance Evaluation of hybrid PMB PG Grade binder	2022-2024	M/S BITCOL
3	Application of Cold Bituminous Based Eco-friendly Road Building Technology for the Special Featured Himalayan Regions	2019-2022	MoEF under NMHS Scheme
4	Cold Mix technology for high volume roads	2019-2020	CSIR Funded under FBR Category
5	Development of Rejuvenating Agent for use in recycling of asphalt pavement	2019-2020	CSIR Funded under FBR Category
6	Performance Evaluation of Process based Waste Plastic Incorporated Pavement Section with User Perspective (Year I)	2019-2020	Earthwatch Institute
7	Development and Testing of Prototype Pothole Repair Machine	2018-2020	CSIR-CRRI
8	Evaluation of “RoadLay PR” for instant pothole mix and special binder for sealing of joints”	2017-2018	M/s Ski Soluation
9	Evaluation of PME Rejuvenator of LN Petrochem Pvt. Ltd	2017-2019	M/s LN Petrochem Pvt. Ltd
10	Feasibility study on “Utilization of Ferrochrome Slag” in Road Making	2016-2020	M/s Tata Steel Limited
11	Up gradation and Modification of Cold Mix Technology	2016-2018	M/s Bitchem Asphalt Technologies
12	Effect of rheological Characteristics of Bitumen on Foam and Resulting Mixes	2015-2020	CSIR-CRRI
13	Development of specifications of noise absorbing friction courses in rainwater harvesting for Indian Conditions.	2015-2017	CSIR-CRRI
14	Evaluation of Antiskid Hot & Cold treatment.	2015	M/s Metalite Eco Future Labs Pvt Ltd,
15	Evaluation of Crack Sealing Method	2015	M/s Metalite Eco Future Labs Pvt Ltd,
16	Performance Evaluation of OGPC (Open Graded Premix Carpeting) done using Cold Mix Emulsion from Mulyagaon to Palethi motor road in Devprayag Block of Tehri Gharwal, Uttarakanda, for length 7.78 km	2014-2016	M/s Juno Bitumix Pvt. Ltd.
17	Design and Development of Pothole Repair Machine for Rural Roads	2014-2017	CSIR-CRRI
18	Development of Low Energy Asphalt Mixes Using Foam Bitumen and Cationic Bitumen Emulsions	2013-2015	CSIR-CRRI
<i>As Project Coordinator and Work Package Leader</i>			
1	Zero Emission Research Initiatives for Solid Waste from Leather Industry (Includes two tasks)	2013-2017	CSIR 12 th Plan Project
2	Development and Application of Technologies for Sustainable Transportation (SUSTRANS)	2013-2017	CSIR 12 th Plan Project,

	<ul style="list-style-type: none"> • WP 10- Conversion of Chromium containing solid waste generated in leather industry into pavement Sector • WP 12- Development of Technology Superior PERforming bituminous PAVements (SUPERPAVE) • WP 14- Use of Reclaimed Asphalt Pavement in Construction and Maintenance of Roads • WP 15- Estimation of Carbon Footprints in Road Construction Process 		
As Team Member			
1	Feasibility Study (Lab & Field) of Using Higher RAP Content in Bituminous Pavements	2020-2025	National Highway Authority of India
2	Utilization of PVC based waste generated from medical blisters (Pharmaceutical Waste) in asphalt Road Construction	2018-2020	CSIR-CRRI
3	Modernization and Infrastructure Up-gradation of R&D facilities for Pavement and Environmental Engineering	2017-2020	CSIR-CRRI
4	Determination of adulteration of binder during transportation.	2015-2016	CSIR-CRRI
5	Proposal for modernization and infrastructure up gradation of R&D facilities in Flexible pavement division	2015-2020	CSIR-CRRI
6	Utilization of waste plastic for construction of bituminous roads in Arunachal Pradesh	2019-2022	A P State Council for Science and Technology
7	Evaluation of waste plastic for road construction	2019-2020	Relianec Industries
8	Demonstration / implementation of Environmentally Friendly Road Comfort Technology as Pilot Project for Kolkata Municipal Corporation implementation on given stretch (Phase – I)	2018-2019	Kolkotta Municipal Corporation
9	Development of specifications and guidelines for use of sulphur modified asphalt in bituminous base and binder course construction	2017-2020	Reliance Industries
10	Development of Carbon Based Additive for Improved Performance of Bituminous Pavement (Phase I)	2015-16	Cleantech International Foundation
11	Feasibility Study on Utilisation of Air-cooled Blast Furnace Slag (ACBFS) in Road Making	2015-17	Steel Authority of India, Ranchi
12	Evaluation of Warm Mix Asphalt	2015-16	AKZO Nobel Indian Pvt. Ltd
13	Development of electrochemical mixer-settler and optimization studies for the recovery of palladium from high-level liquid waste	2013	IGCAR, Kalpakkam

Consultancy Projects

Sl No	Project Title	Duration	Sponsoring Agency
As Principal Investigator			
1	Investigation for Rehabilitation/Strengthening of PWD roads under PWD SER-2	2021	Public Works Department, (GNCTD)
2	Design of Stone Matrix Asphalt (SMA) with various additives Hydrated lime, fly ash, plastic waste.	2021-2022	M/s Lucknow Development Authority
3	Vetting of design of flexible pavement using zydex nanotechnology based additives for rehabilitation and upgradation of package iii (km 107 to 129) section nh 4, andaman and nicobar island	2020	M/s Zydex Industries
4	Evaluation of “Shali Patch” for Use as Instant Patch Repair/Pothole Filling Material	2019	STP Limited

5	Investigation for Rehabilitation/Strengthening of PWD roads under PWD South East Road-I	2019-2020	Public Works Department, (GNCTD)
6	Investigation for Rehabilitation/Strengthening of PWD roads under division East Road (M 212)/ Sub div I	2019-2020	Public Works Department, (GNCTD)
7	Investigation for Rehabilitation/Strengthening of Aruna Asaf Ali Road from ORR to M.M. Road approximately 4km Dual Carriageway Under South Delhi-II	2018-19	Public Works Department, (GNCTD)
8	Investigation for Rehabilitation/Strengthening of Aruna Asaf Ali Road from ORR to M.M. Road approximately 4km Dual Carriageway Under South Delhi-II	2017-18	Public Works Department, (GNCTD)
9	Evaluation of Promix Patching Solution	2015	Eco Green Infrastructure & Development Pvt Ltd
As Team Member			
1	Pavement design and mix design using cold in place recycling with foamed bitumen for Beawar Pali project of LnT IDPL in Rajasthan	2019-2020	Markolines Traffic Controls Pvt. Ltd
2	Investigation for Rehabilitation/Strengthening of Various Roads Sub-Division – SR 11, 12 AND 14 UNDER Division SR-1, PWD New Delhi	2019-2020	PWD, Delhi
3	Mix design for CTSB and RAP for widening of NH-4 from single lane to 2 lanes in Andaman & Nicobar Islands (Pkg-2, Pkg-3 and Pkg 4) and recommendation on feasible pavement design.	2018-19	Vasishta Constructions Pvt Ltd.
4	Investigation of existing pavement to explore the possibilities and extent of reclamation in rehabilitation in order to maintain level of Road on Madhya Marg, Chandigarh	2018-19	UT Chandigarh
5	Pavement design and mix design using cold in place recycling for repair/rehabilitation work of Bharatpur-Mahua section from km 63+00 to km 120+00 of NH 21 in state of Rajasthan	2018-20	M/s Mahua Bharatpur Expressway Limited
6	Hot in place recycling (HIPR) of Ranchi Ring road section of app length 30 Km-6 lane carriageway. Preparation of HIPR mix design for renewal treatment/preventive maintenance of existing pavement.	2018-19	Infrastructure Leasing & Financial Services
7	Improvement/ widening to two laning with paved shoulder of Udaipur-sabroom section from km 55.00 to km 128.712 of NH 44 in the state of Tripura under SARDP-NE Phase A-Cementitious subbase and sub grade	2017-18	National Highways & Infrastructure Development Corporation Limited
8	Pavement design using appropriate recycling option for Madhavpur section (46.54kms) of upgradation work of Gadu-Porbandar section of NH-8E	2017-18	Kalthia Infra Project Private
9	Evaluation of Instant Road Repair Mix Esmac PR a ready to use pothole/patch repair mix for bituminous pavement	2017	Esbee Road Products
10	Design of job mix for microsurfacing work for various PWD Roads under Chief Engineer North of Delhi PWD (Five Packages)	2016-17	PWD, North Zone, Delhi
11	Design and construction methodology for cold in situ recycling of 6 laning of Varanasi-Aurangabad section of NH-2 from km 786.00 to km 871.00 (length 85 km) in the state of UP/Bihar on DBFOT toll basis under NHDP phase-V	2016-17	Limited SOMA Enterprises
12	Pavement Design and Mix Design of RAP with Foam Bitumen for Lambia Section for Rajasthan State.	2014-15	G R Infra Pvt Ltd

Annexure II: Publications

International and National Journal Publications

1. Bhattacharya, T., & Kar, S. S. (2022). Greener Roads: India Specific and Direct Carbon Dioxide (CO₂) Emissions From Bitumen. *Indian Highways*, 50(2).
2. Fadmore, O. F., Kar, S. S., & Tiwari, D. (2022). Characterisation of foam bitumen mixes with different RAP content at elevated mixing temperature using design of experiment (DOE) approach. *International Journal of Pavement Engineering*, 1-18.
3. Fadmore, O.F., Tiwari, D., Kar, S.S. and Singh, A., (2021). Impact of RAP Content in Foam Bitumen Mix Performances. *Indian Highways*, Vol 49(06), pp. 31-37
4. Fadmore, O. F., Kar, S. S., Tiwari, D., & Singh, A. (2021). Environmental and Economic Impact of Mixed Cow Dung and Husk Ashes in Subgrade Soil Stabilization. *International Journal of Pavement Research and Technology*, 1-12. (<https://link.springer.com/article/10.1007/s42947-021-00056-8>)
5. Eleyedath, A., Kar, S. S., & Swamy, A. K. (2021). SOM-and-GEP-Based Model for the Prediction of Foamed Bitumen Characteristics. *Journal of Transportation Engineering, Part B: Pavements*, 147(2), 04021008. (<https://ascelibrary.org/doi/full/10.1061/JPEODX.0000260>)
6. Kar, S. S., Swamy, A. K., Tiwari, D., & Jain, P. K. (2020). Impact of Chemical Composition on Foaming Characteristics of Asphalt Binder. *Journal of Transportation Engineering, Part B: Pavements*, 146(3), 04020045. (<https://ascelibrary.org/doi/full/10.1061/JPEODX.0000196>)
7. Kar S S, Kuamr B., Behl, A., & Shukla, A. (2020). Development of Methodology for Quantification of GHG Emission During Construction of Flexible and Rigid Pavement: A Case Study. *Indian Highways*, 18. (<https://trid.trb.org/view/1746088>)
8. Murugan, K. P., Balaji, M., Kar, S. S., Swarnalatha, S., & Sekaran, G. (2020). Nano fibrous carbon produced from chromium bearing tannery solid waste as the bitumen modifier. *Journal of Environmental Management*, 270, 110882 (<https://pubmed.ncbi.nlm.nih.gov/32721321/>)
9. Kar, S. S., Nagabhushana, M. N., & Jain, P. K. (2019). Performance of hot bituminous mixes admixed with blended synthetic fibers. *International Journal of Pavement Research and Technology*, 12(4), 370-379. (<https://link.springer.com/article/10.1007/s42947-019-0044-x>)
10. Eleyedath, A., Kar, S.S., and Swamy, A.K. (2019) "Modelling of Expansion Ratio and Half-life of Foamed Bitumen using Gene Expression Programming." *International Journal of Pavement Engineering*. (<https://www.tandfonline.com/doi/abs/10.1080/10298436.2019.1609675?journalCode=gpav20>)
11. Kar, S.S., Swamy, A.K., Tiwari, D., and Jain, P.K. (2018). "Impact of Low Viscosity Grade Bitumen on Foaming Characteristics." *Journal of the South African Institution of Civil Engineering*, 60(2). 40-52. (<http://www.scielo.org.za/pdf/jsaice/v60n2/05.pdf>)
12. Behl, A., Kar, S. S., Nagabhushana, M. N., Chandra, S., & Shukla, M. (2018). Application of Foam Bitumen in Asphalt Pavement Recycling: A Case Study. In *Journal of the Indian Roads Congress* 79, (2). (<https://trid.trb.org/view/1568545>)
13. Kar, S.S., Swamy, A.K., Tiwari, D., and Jain, P.K. (2018). "Impact of Recycled Asphalt Pavements on Properties of Foamed Bituminous Mixtures." *Baltic Journal of Road and Bridge Engineering*, 13(1), 14-22. (<https://bjrbe-journals.rtu.lv/article/view/bjrbe.2018.383>)
14. Kar, S. S., Solanki, R., Kumar, G., & Jain, P. K. (2017). Modified asphalt-based crack and joint repair system. *Proceedings of the Institution of Civil Engineers-Construction Materials*, 170(5), 244-249. (<https://www.icevirtuallibrary.com/doi/full/10.1680/jcoma.16.00057>)
15. Kar, S. S., Behl, A., & Shukl, A. (2017). Green House Gases (GHG) Impact Assessment Tools: A Review. *Indian Highways*, 45(3), 19-27.
16. Kar, S. S., Swamy, A. K., Tiwari, D., & Jain, P. K. (2017). A Critical, Review On Foami And Emulsion Based Cold Recycled Asphalt Mixes. *Indian Highways*, 45(8). 23-32 (<https://trid.trb.org/view/1486029>)
17. Kar, S.S., Swamy, A.K., Tiwari, D., and Jain, P.K. (2017). "Impact of Binder on Foamed Bituminous Mixtures Properties." *Proceedings of Institution of Civil Engineers: Construction Materials*, 170(4), 194-204. (<https://www.icevirtuallibrary.com/doi/abs/10.1680/jcoma.16.00037>)
18. Kar, S.S., Jain, P.K, and Swamy, A.K., Tiwari, D. (2017). "Study on Effect of Viscosity of Foaming Characteristics and Stabilized Mix Properties." *The International Journal of Pavement Engineering & Asphalt Technology*, 18(1), 11-30. DOI:10.1515/ijpeat-2016-0009,
19. Kar, S.S., Swamy, A.K., Tiwari, D., and Jain, P.K. (2017). "A Critical Review on Foam and Emulsion Based Cold Recycled Asphalt Mixes." *Indian Highways*, 45(8), 23-32. (<https://trid.trb.org/view/1486029>)

20. **Kar, S. S., Jain, P. K., & Sekaran, G.** (2016). FTIR Analysis of Aging of Binder Modified with Chromium Waste Generated from Leather Industry. *i-Manager's Journal on Material Science*, 4(2), 24. (<https://search.proquest.com/openview/efa2f541cc45dd44011c2c4364edc1d1/1?pq-origsite=gscholar&cbl=2037357>)
21. **Kar, S. S., Arora, K., Mani, C., & Jain, P. K.** (2016). Characterization of Bituminous Mixes Containing Harder Grade Bitumen. *Transportation Research Procedia*, 17, 349-358. (<https://www.sciencedirect.com/science/article/pii/S2352146516307384>)
22. **Kar, S. S., Tiwari, D., Swamy, A.K., and Jain, P.K.** (2016). "Significance of RAP Content and Foamed Binder Content on Mechanistic Characteristics of Recycled Foamed Bituminous Mixes." *Journal of Civil and Environmental Engineering*, 6(2), 220. (<http://dx.doi.org/10.4172/2165-784X.1000220>)
23. **Kar, S., Behl, A., Jain, P.K. and Shukla, A.,** (2015). Estimation of Carbon Footprints in Bituminous Road Construction: A Case Study. *Indian Highways*, 43(12). 27-32 (<https://trid.trb.org/view/1394586>)
24. **Swaroop, S., Sravani, A., & Jain, P. K.** (2015). Comparison of mechanistic characteristics of cold, mild warm and half warm mixes for bituminous road construction. *Indian Journal of Engineering and Material Science*. 22, 85–92 (<http://nopr.niscair.res.in/handle/123456789/31250>)
25. **Swaroop, S., Ghosh, M. K., Sanjay, K., & Mishra, B. K.** (2013). Extraction of Cu and Cr from a spent Cu–Cr catalyst: Recovery enhancement through mechanical activation. *Hydrometallurgy*, 136, 8-14. <https://www.sciencedirect.com/science/article/abs/pii/S0304386X13000534>
26. **Baba, A. A., Swaroop, S., Ghosh, M. K., & Adekola, F. A.** (2013). Mineralogical characterization and leaching behavior of Nigerian ilmenite ore. *Transactions of Nonferrous Metals Society of China*, 23(9), 2743-2750

Articles in Magazine

1. **Kar, S. S., & Nagabhushana, M. N.,** (2018) Cold Mix Technology For Rural Roads, *Civil Engineering and Construction Review, India* 31(4), 1-4
2. **Kar, S. S., & Jain, P. K.** (2016), An Innovative Method for Repair of Potholes, *Civil Engineering and Construction Review, India* 29(5), 31-36
3. **Jain, P. K. & Kar, S. S.,** (2015), Patch Fill: An Innovative Method for Repair of Potholes, *Indian Road Congress Bulletin*, 25(1), 45-48
4. **Kar, S. S** (2020), Spearheading Usage Of Plastic Waste, *Civil Engineering and Construction Review, India* 33(10), 56-59
5. **Behl A, Bharath G & Kar, S. S** Construction of Sustainable Pavements Through Recycling, *New Building Materials and Construction World*, September, 2019
6. **केवल कृष्ण गोला, शिक्षा स्वरूपा कर, मनोज शुक्ला एवं एम०एन० नागभूषण,** (2018), कटबैक एस्पल्ट आधारित गड्ढे की मरम्मत विधि का मूल्यांकन, *भारतीय वैज्ञानिक एवं औद्योगिक अनुसंधान पत्रिका, भारत*, 26(1), 37-42 (<http://nopr.niscair.res.in/handle/123456789/45713>)
7. **शिक्षा स्वरूपा कर एवं केवल कृष्ण गोला,** (2018) डामर के स्रोत और उपयोग, *सड़क दर्पण, भारत*, 17, 43-38 (<https://crridom.gov.in/sites/default/files/Sadak%20Darpan.pdf>)
8. **शिक्षा स्वरूपा कर एवं पीके जैन,** (2015) पैच फिल : गड्ढे की मरम्मत के लिए एक उत्तम पद्धति., *सड़क दर्पण, भारत*, 12, 1-5 (<https://crridom.gov.in/sites/default/files/Sadak-darpan-12-09-2015p.pdf>)

Proceedings of Conferences/ Symposia/ Seminars

1. **Siksha Swaroop, A.R. Sheik, K. Sanjay and M.K. Ghosh** "Reclamation of metal values from copper-chromium spent catalysts" *International Mineral Processing Congress* September 2012. (Published in proceeding)
2. **Siksha Swaroop, Sravani A, P K Jain** "Studies on Performance of Mild Warm Asphalt Mix for Road Construction" *3rd International Science Congress*. 8th -9th Dec 13, Coimbatore, Tamil Nadu. (Published in proceeding)
3. **S. Adhikari, Siksha Swaroop, A. R. Sheik** "Extraction And Electrodeposition Of Palladium From Simulated High Level Liquid Waste Using Ionic Liquid" Published in proceeding of *International Conference On Emerging Materials And Processes*, 26th – 28th Feb 2014, IMMT, Bhubaneswar Pg 153-156
4. **Siksha Swaroop Kar, Sravani A, P K Jain** "Bitumen Emulsion based low energy Mild Warm Mixes for Maintenance of Roads" *5th Regional Conference, SARF/IRF 2014 - "Better Roads Moving Africa"* (Presented)
5. **Siksha Swaroop Kar, Khusboo Arora, Chandra Kant Mani & P K Jain,** Characterization of Bituminous Mixes Containing Harder Grade Bitumen, Published in *Proceeding of Transportation Planning and Implementation Methodologies for Developing Countries*, 10-12th December 2014, IIT Mumbai, India
6. **Siksha Swaroop Kar, P. K. Jain, Aravind Krishna Swamy & Devesh Tiwari** Study on Effect of Viscosity on Foaming Characteristics of Bitumen. *Proceedings of the LJMU 14th Annual International Conference on Asphalt*,

- Pavement Engineering and Infrastructure. 11th – 12th February 2015, Liverpool, UK. Volume 14, ISBN 978-0-9571804-6-8 Page 49
7. P. K. Jain, R. K. Swami, J. B. Sengupta, Gagandeep Singh and **Siksha Swaroopa Kar** Studies on Use of Air-Cooled Blast Furnace Slag as Aggregate in Road Construction, Proceedings of the LJMU 14th Annual International Conference on Asphalt, Pavement Engineering and Infrastructure. 11th – 12th February 2015, Liverpool, UK. Volume 14, ISBN 978-0-9571804-6-8 page 22
 8. **Siksha Swaroopa Kar**, P.K. Jain and S Gangopadhaya, Cold and Mild Warm Mix Technologies for Maintenance of Roads in Strategic Area- A Way Forward. Published in Souvenir of International Seminar of “New Construction Materials and design, in bridge, Tunnel & Road construction suitable for infrastructure development in inaccessible Border Area” 11-12th Sept, Page 50
 9. Ambika Behl, **Siksha Swaroopa Kar**, P.K. Jain and Mrs Uma Devi, A Laboratory Investigation on the Properties of Asphalt Binder and Mixture Containing Rediset LQ, Published in proceeding of 3rd Conference of Transportation Research Group of India, Kolkotta, 17-20th Dec 15
 10. **Siksha Swaroopa Kar** & P.K. Jain, PatchFill: Solution for Repair of Potholes, Advance in Engineering and Technologies, McGraw Hill Educations, Vol (10) Dec 2015 Page 452-459 and also Published in Proceedings of Sixth International Conference on Advances in Engineering and Technology AET 2015, Chochin, India, 26-17th Dec 15 Page 218-225
 11. **Siksha Swaroopa Kar**, Shakti, P K Jain, and G Shekharan, Studies on Rheology of Asphalt Modified by Chromium Containing Waste of Leather Industry, Published in Proceeding of International Conference on Materials, Design and Manufacturing Process, Anna University, Chennai, 17th-19th Feb 2016Page 365-368
 12. **Siksha Swaroopa Kar**, Ravinder Solanki, Gajender Kumar & P K Jain, Studies on “Modified Asphalt Based Crack and Joint Repair System” for Rigid And Asphalt Pavement, Proceedings of the LJMU 15th Annual International Conference on Asphalt, Pavement Engineering and Infrastructure. 24th – 25th February 2016, Liverpool, UK. Volume 15, ISBN 978-0-9571804-8-2
 13. **Siksha Swaroopa Kar**, Uma Devi Rangoli, P K Jain, Rajiv Aggrawal & Gajender Kumar, Cold Mix Technology for Rural Roads: An Overview and Transfer Model, Proceedings of the LJMU 15th Annual International Conference on Asphalt, Pavement Engineering and Infrastructure. 24th – 25th February 2016, Liverpool, UK. Volume 15, ISBN 978-0-9571804-8-2
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 20. **Siksha Swaroopa Kar**, Development of Indigenous Pothole Repair Machine, Published in Proceeding of India International Science Festival, 8-11 th Dec 2016, at NPL, New Delhi
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 22. Ambika Behl and **Siksha Swaroopa**, “Study on Use of Nanotechnology in Asphalt Road Construction” Published in Proceeding International Conference on Nanomaterials & Nanotechnology, 2-3rd March 2017, Vinoba Bhawe Research Institute, Saidabad, Allahabad, India. VBRI Press AB, ISBN:978-91-8825-05 DOI: 10.5185/icnano.2017
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27. **Siksha Swraoopa Kar**, Ambika Behl, M N Nagabhushana, Gagandeep Singh, Studies on Use of Ferro Chrome Slag for replacement of Aggregate in Road Construction, International Conference on Resource Sustainability – Cities, 1-3rd July, 2019, Australia
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30. **Siksha Swraoopa Kar**, Satish Chandra and M N Nagabhushana. Mix design approach of cold mix asphalt using response surface method. *2nd International Conference on Advances in Materials and Pavement Performance Prediction (AM3P 2020)*, 27-29 May, 2020, San Antonio, TX, USA
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32. Eleyedath, A., **Kar, S.S.**, and Swamy, A.K. (2020). Hybrid Machine Learning Technique for Predicting Foamed Bitumen Properties, 7th Conference on Transportation Systems Engineering and Management (CTSEM 2020), December 29 – 30, 2020, Trivandrum, Kerala, India
33. Jariwala D, **Kar, S.S.**, and Dave S, Laboratory evaluation of cold bitumen emulsion mixtures (CBEMs) using different mixing techniques, **ASCE International Airfield & Highway Pavements Conference (Pavements 2021)** June 8-10, 2021

Book Chapter

1. Gaur, M., **Kar, S. S.**, & Shukla, A. (2022). Mitigation Strategies of Greenhouse Gas Control: Policy Measures. In *Greenhouse Gases: Sources, Sinks and Mitigation* (pp. 231-254). Springer, Singapore.
2. **Kar, S. S.**, Chandra, S., & Nagabhushana, M. N. (2020, December). Mix design approach of cold mix asphalt using response surface method. In *Advances in Materials and Pavement Performance Prediction II: Contributions to the 2nd International Conference on Advances in Materials and Pavement Performance Prediction (AM3P 2020)*, 27-29 May, 2020, San Antonio, TX, USA (p. 282). CRC Press.
3. **Kar, S. S.**, Bharath, G., & Shukla, M. K. (2020, December). Effectiveness of polymer modified emulsion based rejuvenator. In *Advances in Materials and Pavement Performance Prediction II: Contributions to the 2nd International Conference on Advances in Materials and Pavement Performance Prediction (AM3P 2020)*, 27-29 May, 2020, San Antonio, TX, USA (p. 278). CRC Press.

Annexure III: Patent Files

1. Design and development of Pothole Repair Machine, **Siksha Swaroopa Kar**, Dr P K Jain, Dinesh Kumar Sharma, Neha Singh Complete Filed on 21st March 2015 Application No: 0821DEL2014, INDIA
2. Bituminous Compositions Comprising Nano Carbon Black Particles and The Methods of Preparation Thereof, Ashok Sharma, Soni Madhu, Dr P K Jain, **Siksha Swaroopa Kar** and Ms Farhat Filed on 7th March 2016, Application No 201611008235, India
3. Engineering of Bitumen Emulsion based Pothole Repair System, **Siksha Swaroopa Kar**, M N Nagabhushana, Satish Chandra, Filed on 3rd May 2019, Application No 01911017676, India

Annexure IV: Student Guidance**Doctor of Philosophy**

Sl No	Name	Research Area	Institute	Year	Remark
1	Fadamoro Oluwafemi Festus	Performance Evaluation of Foam Bitumen Stabilization Using Warm RAP Material and Aggregates	Academy of Scientific and Industrial Research	Awarded degree in 2021	As Co-Supervisor
2	Harisbabu Jullu	-	IIT Roorkee	Registered in 2022	As Co-Supervisor

Master of Technology

Sl No	Name	Research Area	Institute	Year	Remark
1	Hardi Bharadiya	Impact of Rubber Pyrolysis oil on Hot Recycled Mixtures	M S University of Baroda, Gujarat	2021-22	Ongoing
2	Utkarsh Singh	Utilization of Ferro Chrome Slag in Bitumen Base Stabilisation	Thapar Institute of Science and Technology	2021-22	Ongoing
3	Rohit Raju Kulkarni	Developing the Prediction Model for Strength Parameters of Cold Mix using Artificial Neural Network	SVNIT, Surat	2020-21	Summer Internship
4	Kavya GM	Diffusion Study of Rejuvenator in Recycling of Pavement	JNNCE, Shimoga, Karnataka	2019-20	-
5	B Pawan Kumar	Feasibility study of Chrome Slag in SMA Mixes	JNNCE, Shimoga, Karnataka	2019-20	-
6	Darshan Jariwala	Effect of Mixing Technique in Cold Mix Technology	FTE, The MSU Baroda, Gujarat	2019-20	-
7	Hazratullah Paktin	Performance Evaluation of foam bitumen	IIT Delhi	2017-18	-
8	Aashta Mehta	The influence of quality and quantity of RAP on foam bitumen mixes	M S University of Baroda, Gujarat	2016-17	-
9	Kuswash Singh Bhagat,	Comparative Study On Bituminous Concrete Mixes Using Waste Materials (Steel Slag and Modified Crumb Rubber Binder	NIIT, Bhopal	2014-15	-
10	Ritika Mishra	Rheology of Bitumen Modified with Leather Waste	SVNIT, Surat	2014-15	Summer Internship
11	Sidharth Shrama,	Rheology of Foamed Bitumen and Study of Foam Asphalt Mixes	SVIT, Indor	2013-14	-

Bachelor of Technology

Sl No	Name	Research Area	Institute	Year	Remark
1	Devika Harikumar,	Effects of rejuvenators on aging properties of viscosity grade bitumen through FTIR analysis	APJ Abdul Kalam Technological University	2018	-
2	Riya Mittal	Modification of Bitumen using Medical Waste	Chandigarh Group of College of Technical Campus	2017	-
3	Kartika Tanwar	Comparison of the properties of Cationic SS2, Polymer Modified Two-in-one and All-in-one emulsion with lime and cement as filler	IIT, Delhi	2015	-

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Silisha Swaroopa