



# Dr. Aditya Kumar Das

Assistant Professor, Dept. of Civil Engg., NIT Rourkela

**Ph. D.** (Indian Institute of Technology Bombay)

Self-motivated, Optimistic, Responsible, Hardworking



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ResearchGate

## EDUCATIONAL QUALIFICATION

Program	Institute/University	Year	CPI/marks
<b>Ph. D.</b> (Pavement materials)	Indian Institute of Technology Bombay, Mumbai, India	2020	9.18
<b>Post-Graduation</b> (Transportation Engineering)	National Institute of Technology Rourkela, Odisha, India	2014	9.65
<b>Graduation</b> (Civil Engineering)	Veer Surendra Sai University of Technology, Odisha, India	2012	8.3

## JOURNAL ARTICLES

### Peer reviewed journals published

- Purohit, S., Panda, M., & Das, A. K. (2023). Impact of pre-treated recycled concrete aggregate on performance of bituminous mix composed of reclaimed asphalt pavement with waste polyethylene. Road Materials and Pavement Design, T & F, pp. 1-21. <https://doi.org/10.1080/14680629.2023.2230304>. (SCIE, IF: 3.805)
- Penki, R., Rout, S. K., & Das, A.K. (2022). Computational Techniques for Proportioning of Aggregates in Bituminous Mix Design. International Journal of Pavement Research and Technology, Springer, <https://doi.org/10.1007/s42947-022-00264-w>. (Scopus, IS: 2.67)
- Purohit, S., Panda, M., & Das, A. K. (2022). Performance of waste polyethylene modified bituminous paving mixes containing reclaimed asphalt pavement and recycled concrete aggregate. Construction and Building Materials, Elsevier, 348, 128677, pp.1-16. <https://doi.org/10.1016/j.conbuildmat.2022.128677>. (SCIE, IF: 7.693).
- Patra, S.K., Panda, M., Das, A. K. & Bhuyan P. K. (2022). Performance Evaluation of Surface Treated Montmorillonite Nano Clay Modified Binder at High and Intermediate Temperature Conditions. Road Materials and Pavement Design, T & F, 24 (5), pp. 1-24. <https://doi.org/10.1080/14680629.2022.2072374>. (SCIE, IF: 3.805)
- Das, A. K., & Singh, D. (2022). Evaluating Cracking Resistance of Nano-Hydrated Lime Treated Asphalt Mastic using Work of Fracture. International Journal of Pavement Engineering, Taylor & Francis, 24(2), pp. 1-14. <https://doi.org/10.1080/10298436.2022.2052873> (SCIE, IF: 4.178).
- Singh, D., Das, A. K., Habal, A., & Bhonsle, S. (2021). Effectiveness of Hydrated Lime filler on Fracture and Cracking Properties of Polymer and Crumb Rubber Modified Asphalt Mastics. Advances in Civil

Engineering Materials, ASTM International, 10(1), pp. 107-121.

<https://doi.org/10.1520/ACEM20200051> (**Scopus, ESCL, IS: 1.61**).

7. **Das, A. K., & Singh, D.** (2021). *Interfacial Bond Strength and Moisture Induced Damage Characteristics of Asphalt Mastic-Aggregate System Composed of Nano Hydrated Lime Filler*. International Journal of Pavement Research and Technology, Springer, 13(6), pp. 665-672. <https://doi.org/10.1007/s42947-020-6004-7>. (**Scopus, IS: 2.67**)
8. **Das, A. K., & Singh, D.** (2020). *Evaluation of Fatigue Performance of Asphalt Mastics Composed of Nano Hydrated Lime Filler*. Construction and Building Materials, Elsevier, 269, 121322, pp.1-14. <https://doi.org/10.1016/j.conbuildmat.2020.121322>. (**SCIE, IF:7.693**)
9. **Das, A. K., & Singh, D.** (2019). *Influence of Nano size hydrated lime filler on rutting performance of asphalt mastic*. Road Materials and Pavement Design, Taylor & Francis, 22 (5), pp.1-21, <https://doi.org/10.1080/14680629.2019.1660208>. (**SCIE, IF: 3.805**)
10. Singh, D., Mishra, V., Girimath, S. B., **Das, A. K., & Rajan, B.,** (2019). *Evaluation of Rheological and Moisture Damage Properties of Crumb Rubber Modified Asphalt Binder*, Advances in Civil Engineering Materials, ASTM International, 8(1), pp.477-496. <https://doi.org/10.1520/ACEM20190045>. (**Scopus, ESCL, IS: 1.61**)
11. Singh, D., Patel, H., Habal, A., **Das, A.K.,** Kapgate, B.P. & Rajkumar, K. (2019). *Evolution of Coefficient of Friction between Tire and Pavement under Wet Conditions Using Surface Free Energy Technique*, Construction and Building Materials, Elsevier, 204, pp.105-112. <https://doi.org/10.1016/j.conbuildmat.2019.01.122>. (**SCIE, IF: 7.693**)
12. **Das, A. K., & Panda, M.** (2019). *Effectiveness of Chitin on Thermal Susceptibility, Rheological and Aging Resistivity Behavior of Sulphur Modified Bitumen Binder*. Road Materials & Pavement Design, Taylor & Francis 21(7), pp.1-19. <https://doi.org/10.1080/14680629.2019.1590221>. (**SCIE, IF: 3.805**)
13. **Das, A. K., & Singh, D.** (2019). *Influence of Basalt, Hydrated Lime, and Fly-ash Fillers on Aging Behavior of Asphalt Mastic Using Essential and Plastic Work of Fracture*. Journal of Testing and Evaluation, ASTM International, 47(5), pp.1-19. <https://doi.org/10.1520/JTE20180147>. (**SCIE, IF: 1.333**)
14. **Das, A. K., & Singh, D.** (2018). *Effects of Regular and Nano Sized Hydrated Lime Fillers on Fatigue and Bond Strength Behavior of Asphalt Mastic*. Transportation Research Record, Transportation Research Board, SAGE, 2672 (28), pp.31-41. <https://doi.org/10.1177/0361198118759064>. (**SCIE, IF: 2.019**)
15. **Das, A. K., & Singh, D.** (2018). *Effects of Basalt and Hydrated Lime Fillers on Rheological and Fracture Cracking Behavior of Polymer Modified Asphalt Mastic*. Journal of Materials in Civil Engineering, ASCE, 30(3), pp.1-10. [https://doi.org/10.1061/\(ASCE\)MT.1943-5533.0002196](https://doi.org/10.1061/(ASCE)MT.1943-5533.0002196). (**SCIE, IF: 3.651**)
16. **Das, A. K., & Panda, M.** (2017). *Investigation on Rheological Performance of Sulphur Modified Bitumen (SMB) Binders*. Construction and Building Material, Elsevier 149, pp.724-732. <https://doi.org/10.1016/j.conbuildmat.2017.05.198>. (**SCIE, IF: 7.693**)
17. **Das, A. K., & Singh, D.** (2017). *Investigation of rutting, fracture and thermal cracking behavior of asphalt mastic containing basalt and hydrated lime fillers*. Construction and Building Materials, Elsevier, 141, pp.442-452. <https://doi.org/10.1016/j.conbuildmat.2017.03.032>. (**SCIE, IF: 7.693**)
18. Khuntia, S., **Das, A. K.,** Mohanty, M., & Panda, M. (2014). *Prediction of Marshall Parameters of Modified Bituminous Mixtures Using Artificial Intelligence Techniques*. International Journal of Transportation Science and Technology, Elsevier, 3(3), pp.211-227. <https://doi.org/10.1260/2046-0430.3.3.211>. (**Scopus**)

#### **National Journal**

1. **Das, A. K., & Singh, D.** (2018). *Comparison of Rutting and Fatigue Performance of Asphalt Mastic Composed of Regular and Nano-sized Hydrated Lime*. Indian Highways, Indian Road Congress, 46(8), pp.21-28.

2. **Das, A. K.,** & Singh, D. (2022). *Evaluating Combine Effects of Basalt-Hydrated Lime Filler on Low-Temperature Performance of Virgin and Polymer Modified Asphalt Mastics*. Indian Highways, Indian Road Congress, 50(6), pp.29-39.

### ***Under Review/Submitted***

1. Das A. K. & Singh, D. (2023) Assessing High Temperature Performance of Asphalt-Filler Composite System Treated with Nano Hydrated Lime, TRR: **Submitted**.

### **INTERNATIONAL CONFERENCES**

1. **Das, A.K.,** Panda, M., Patra, S. K., & Basa, B. (2023) Assessing Fatigue Performance of Chitin Treated Asphalt Binder. 3<sup>rd</sup> International Conference on Recent Developments in Sustainable Infrastructures (Engineering, Technology & Innovation) (ICRDSI-2023), 3-5 March, KIITDU, Bhubaneswar, Odisha, India.
2. **Das, A.K.,** Sahani, R., & Pradhan, N. (2023) Evaluating Aging Resistance Properties of Sulphur-Chitin Modified Asphalt. 3<sup>rd</sup> International Conference on Recent Developments in Sustainable Infrastructures (Engineering, Technology & Innovation) (ICRDSI-2023), 3-5 March, KIITDU, Bhubaneswar, Odisha, India.
3. Patra, S.K., Panda, M. & **Das, A.K.** (2021) Influence of Surface Treated Montmorillonite Nano clay on Oxidative Aging Properties of Bitumen. 12<sup>th</sup> International Conference on Road and Airfield Pavement Technology, 14-15 July, University of Moratuwa, Srilanka.
4. Singh, D., **Das, A. K.,** Habal, A., & Bhonsle, S., (2020). Fracture and Toughness Behavior of Polymer and Crumb Rubber Modified Asphalt Mastics Composed of Basalt and Hydrated Lime Fillers, 99<sup>th</sup> Annual Meeting, Transportation Research Board, 12-16 January, Washington DC, 19-00723.
5. **Das, A. K.,** & Singh, D. (2019). Comparison of Low-Temperature Performance of Virgin and Polymer Modified Asphalt Mastics Containing Basalt and Hydrated Lime fillers. 11<sup>th</sup> International Conference on Road and Airfield pavement Technology (11<sup>th</sup> ICPT-2019), 10-12 July, Kuala Lumpur, Malaysia, 11, pp.1-8.
6. **Das, A.K.,** & Singh, D. (2018). Effects of Regular and Nano Sized Hydrated Lime Fillers on Fatigue and Bond Strength Behavior of Asphalt Mastic. 97<sup>th</sup> Annual Meeting, Transportation Research Board, 7-11 January, Washington DC, 18-03836.
7. **Das, A. K.,** & Singh, D. (2017). Comparison of Rutting and Ductile Failure Behavior of Asphalt Mastics Containing Hydrated Lime. 10<sup>th</sup> International Conference on Road and Airfield pavement Technology (10<sup>th</sup> ICPT-2017), 8-10 August, Hong Kong, 15, pp. 1-8.
8. **Das, A. K.,** and Panda M. (2014). Development of flexible pavement cost model for weak subgrade stabilized with fly ash and lime. International Conference on Industrial Engineering Science and Applications (IESA 2014). 2-4 April, Durgapur, West Bengal, India, pp. 382-386.

### **BOOKS/BOOK CHAPTER**

1. Patra, S.K., Panda, M. & **Das, A.K. (2022)**. Influence of Surface Treated Montmorillonite Nano clay on Oxidative Aging Properties of Bitumen. Road and Airfield Pavement Technology, book series, Lecture Notes in Civil Engineering, Springer, Vol. 193, pp. 703-712.
2. Samal, S. R., & **Das, A. K.** (2019). Evaluation of traffic congestion parameters under heterogeneous traffic condition: a case study on Bhubaneswar City. Transportation Research, book series, Lecture Notes in Civil Engineering, Springer, Vol. 45, pp. 675-684.

3. N.N. Das, **A.K. Das** and S.K. Patro (2016) Fine Tuning of Road and Building Projects: An Outcome of Practice. Reference Book, IK international publishing House Pvt. Ltd. New Delhi, ISSN No. 9789384588748.

## RESEARCH INTERESTS

- ❖ Analysis and design of Pavement
- ❖ Quality control and Quality assurance of Pavement
- ❖ Rheological and mechanical characterization of asphaltic materials
- ❖ Application of Nano materials in modification of asphaltic materials
- ❖ Recycled and waste materials for sustainable road construction

## REVIEWER OF JOURNALS

### International Journals

- ❖ Transportation Research Record [Publisher: SAGE]
- ❖ Construction and Building materials [Publisher: Elsevier]
- ❖ Journal of Materials in Civil Engineering [Publisher: ASCE]
- ❖ Journal of Materials Science [Publisher: Springer]
- ❖ Journal of Polymer Science & Technology [Publisher: Taylor & Francis]
- ❖ International Journal of Pavement Engineering [Publisher: Taylor & Francis]
- ❖ Advances in Materials Science and Engineering, [Publisher: Hindawi]
- ❖ Journal of Thermoplastic Composite Materials, [Publisher: SAGE]
- ❖ Journal of Pavement Research & Technology [Publisher: Springer]

### International Conferences

- ❖ WCTR-2019, 15<sup>th</sup> edition, World conference on Transport Research [Organizer: Transportation Systems Engineering group, IIT Bombay India].
- ❖ Geochina-2016, International Conference, China.
- ❖ CTRG-2017, 4<sup>th</sup> edition, Transportation research group of India [Organizer: Transportation Systems Engineering group, IIT Bombay India].
- ❖ TPMDC-2016 & 2020, Biannual conference [Organizer: Transportation Systems Engineering group, IIT Bombay India].

## ACADEMIC RESEARCH

### ❖ Ph. D. Research

**Thesis title:** Effects of Nano Hydrated Lime on Rheological and Mechanical performance of Asphalt Mastics and Mixes.

**Supervisor:** Prof. Dharamveer Singh, IIT Bombay.

#### **Objectives:**

- Fine tuning of process involved in preparation of nano hydrated lime.
- To investigate feasibility of Nano hydrated lime filler on asphalt mastic and mix and its potential application on flexible pavement.

- Identify suitable tests for performance-based characterization of mastic.
- Identify suitable method for evaluation of appropriate filler quantity for mix.
- Evaluate threshold values of hydrated and Nano hydrated fillers for mastic and mix.

#### ❖ **Post-Graduation Research**

**Thesis Title:** Engineering Characterization of Modified Bituminous Binders.

**Supervisor:** Prof. Mahabir Panda, NIT Rourkela.

**Objectives:**

- To evaluate appropriate blending conditions for Sulphur modified bitumen
- To evaluate optimum dosage of Sulphur for preparation of modified bitumen.
- To evaluate influence of Sulphur on performance of bitumen

#### ❖ **Under-Graduation Research**

**Project title:** Development of Flexible Pavement Cost Models for Weak Sub-Grade Stabilized with using Lime and Fly Ash.

**Supervisor:** Prof. S. Rath, VSSUT, Burla, Odisha

**Objective:**

- To understand the effects of fly-ash and Lime combinations in strength properties of soil subgrade.

### RESEARCH GUIDANCE

#### ❖ **PhD Thesis Guided**

Name of Student	Year of Regd.	Title of Thesis	Role	Status
Penky Ramu	2021	Engineering Characterization and Performance evaluation study of Bio-bitumen as pavement materials	Co-supervisor	Ongoing

#### ❖ **PG Dissertation Guided**

Name of Student	Year	Title of dissertation	Role	Status
Thaer Nassif	2021	Investigating Feasibility of Recycle Concrete Aggregates in Hot Mix Asphalt	Supervisor	Completed

### ❖ UG Project Guided

Name of Student	Year	Title of Project	Role	Status
Evita Lenka	2021	Effect of Stabilization of Weak Soil Subgrade on Bituminous Pavement Design	Supervisor	Completed
Subham				
Sourav Mohanty				
Abhijit Mohanty				
Niraj Nabodit				

### AWARDS AND RECOGNITIONS

- ❖ Outstanding Reviewer Recognition, Journal of Materials in Civil Engineering, ASCE, 2020.
- ❖ Institute Silver medal, Transportation Engineering, N I T Rourkela, India, 2015.
- ❖ First Position, 65<sup>th</sup> Republic Day, Transportation Engineering, N I T Rourkela, India, 2013.
- ❖ International Conference travel grant, S.E.R. B., D.S. T., Govt. of India, (Hong Kong, 2017).
- ❖ International Conference travel grant, CSIR, Govt. of India. (Malaysia 2019).
- ❖ MHRD fellowship for Teaching Assistantship, IIT Bombay, 2015-2020.
- ❖ MHRD fellowship for Teaching Assistantship, NIT Rourkela, 2012-2014.
- ❖ MERIT-CUM-IN scholarship, OJEE Rank-07, Govt. of Odisha, 2009-2012.

### PROFESSIONAL EXPERIENCE

- ❖ **Assistant Professor-II | Department of Civil Engineering** **2023 – Present**  
National Institute of Technology Rourkela, Rourkela, Odisha, India
- ❖ **Assistant Professor | Department of Civil Engineering** **2020 – 2023**  
Faculty of Engineering & Technology  
Siksha 'O' Anusandhan deemed to be University, Bhubaneswar, Odisha, India
  - **Teaching Course**
    - Project-1, Seminar & Comprehensive viva-voice (PG)
    - Civil Engineering Workshop Practice (UG)
    - Materials, Materials Testing & Evaluation (UG)
    - Computer Aided Drawing for Civil Engineering (UG)
  - **Academic responsibilities**
    - Department Coordinator, Senior Design Project, Final Year UG, Department of Civil Engineering.

- Department Coordinator, Accreditation Programmes, Department of Civil Engineering (One semester).
- Professor I/C, Transportation Engineering Laboratory, Department of Civil Engineering.

❖ **Assistant Professor | School of Civil Engineering** **2014 - 2015**

Kalinga Institute of Industrial Technology (KIIT) Deemed to be University  
Bhubaneswar, Odisha, India

• **Courses Undertaken**

- Transportation Engineering-I (UG)
- Transportation Engineering-I Laboratory (UG)
- Pavement design (Sessional class) (UG)

• **Academic responsibilities**

- Coordinator, Faculty Development Program-2015, School of Civil Engineering.
- Committee member, Disciplinary Committee, School of Civil Engineering.
- Coordinator, extracurricular activities, UG Program, School of Civil Engineering.

### INVITED TALK AND TRAINING PROGRAM

❖ **Faculty development Program on “Contemporary Technologies for Sustainable Road Construction”** **2021**

Role: Coordinator

Sponsored by AICTE Training and Learning Academy (ATAL), Govt. of India.

Program scheduled: 01-05 October 2021

❖ **Invited talk on Overview of Design of Flexible pavement (IRC 37-2018)** **2021**

Faculty Development Program, Contemporary Technologies for Sustainable Road Construction

Sponsored by AICTE Training and Learning Academy (ATAL), Govt. of India.

Organized by Department of Civil Engineering, FET, ITER, Siksha ‘O’ Anusandhan deemed to be University, Bhubaneswar, Odisha.

❖ **Invited talk on “Compaction of Flexible Pavement”** **2021**

Webinar series

Department of Civil Engineering

Bhubanananda Odisha School of Engineering, Cuttack, Odisha, India

❖ **Keynote talk on "Contemporary Technologies in Civil Engineering"** **2020**

Faculty Development Program,

Civil Engineering Department, GMR Institute of Technology

Rajam, Andhra Pradesh, India

### MANAGEMENT SKILLS

❖ **Continuing Education Program**

- **Short –Term Course:** STC on “Sustainable Approaches in Pavement Engineering”

- **Duration:** 08-12 December 2023
- **Role:** Co-coordinator
- **Organizer:** Department of Civil Engineering, NIT Rourkela
- **Participants:** Field engineers from PWD, RD, OMC, IDCO, OB & CC, Afcon Infra, KPIL and faculty from institutes.

❖ **Conference Organize** **2016-2019**

- **Conferences:** WCTR 2019, CTRG-2017, TPMDC-2016
- **Organized by:** Transportation Systems Engineering, Civil Engg. Dept., IIT Bombay.
- **Responsibilities:** Organizing student Coordinator, Publicity-Exhibition & Scientific committee.

❖ **Workshop Organize** **2019**

- **Training Program-1:** Continuing Education Program on “Construction and Quality Control of Pavements” for UP PWD Engineers. CI: Prof. Dharamveer Singh, IIT Bombay  
Responsibilities: Organizing student coordinator.
- **Training Program-2:** Continuing Education Program on “Construction and Quality Control of pavements” for Engineers, MCGM, Mumbai. CI: Prof. Dharamveer Singh, IIT Bombay.  
Responsibilities: Organizing student coordinator.
- **Training Program-3:** Continuing Education Program on “IRC37: 2018: Guidelines for Design of the Flexible Pavements” for Researchers and field Engineers, India. Course Instructor: Prof. Dharamveer Singh, IIT Bombay.  
Responsibilities: Organizing student coordinator.

## TEACHING AND RESEARCH ASISTANTSHIP

❖ **Teaching Assistantship, Ph. D.** **2015 - 2020**

Civil Engineering Department, IIT Bombay

- **Courses Undertaken**
  1. Pavement Material Testing Laboratory, Post-Graduate Lab course.
  2. Transportation Engineering & Surveying Laboratory, Undergraduate Lab course.

❖ **Teaching Assistantship, Post-Graduate** **2013 - 2014**

Civil Engineering Department, NIT Rourkela

- **Course Undertaken:** Surveying laboratory, Under-graduate lab course, NIT Rourkela

❖ **COLLABORATIVE RESEARCH**

- **Project-1: Use of Waste Plastic and Rubber on the construction of Roads (2018)**
  - Funding Agency: Tata Centre for Technology & Design, IIT Bombay
  - Principal Investigator: Prof. D. Singh, IIT Bombay
  - Role: Student coordinator for experimental works and report preparation
- **Project-2: Understanding Vehicle Tyre and Pavement Interaction (2018)**



- Collaborative Agency: IRMA, Thane, Maharashtra
- Supervisor: Prof. D. Singh, IIT Bombay
- Role: Mentorship of student for Under-graduation project

## ❖ Industrial and Consultancy Projects

2015-2020

- I was involved as research assistant in different consultancy projects with Prof. Dharamveer Singh (Principal Investigator), IIT Bombay. The Nature of work deals with review of DPR, QA-QC reports, Site inspection, Field sample collection, Design check, forensic investigation of materials, Distress survey of pavement and Preparation of report.
  - Technical audit of quality of flexible pavement
  - Investigation of Pavement layer composition
  - Distress and quality check of cement concrete road
  - Design proof check of flexible pavement (NH).
  - Flexible pavement failure investigation
  - Bituminous materials quality testing
  - Bituminous Pavement Failure Investigation for expressway

## SOFTWARE SKILLS

- ❖ IITPAVE, IITRIGID and E-Layer
- ❖ KENPAVE
- ❖ Auto-CAD
- ❖ Origin lab.

## EXTRACURRICULAR ACTIVITIES

- ❖ Cricket
- ❖ Music
- ❖ Cycling
- ❖ Running
- ❖ Swimming

## REFERENCES

1. Prof. Dharamveer Singh  
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3. Prof. Musharraf Zaman  
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4. Prof. Mahabir Panda  
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