

**Study on the Strength and Durability of Alkali Activated
GGBFS Based Geopolymers Synthesized from Pond Ash,
Red Mud and Municipal Solid Waste Reject**



Thesis submitted in partial fulfilment for the Award of Degree

DOCTOR OF PHILOSOPHY

By

Rashmi Shrivastava

Department of Civil Engineering

Indian Institute of Technology

(Banaras Hindu University)

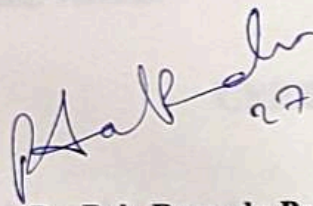
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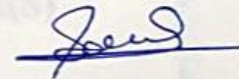
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27.10.2023

Dr. Bala Ramudu Paramkusam

(Supervisor)

Department of Civil Engineering
Indian Institute of Technology
(Banaras Hindu University)
Varanasi -221005



Prof. Shyam Bihari Dwivedi

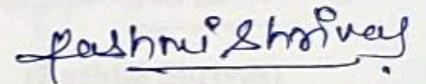
(Co-Supervisor)

Department of Civil Engineering
Indian Institute of Technology
(Banaras Hindu University)
Varanasi -221005

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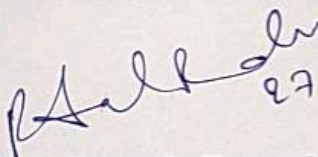


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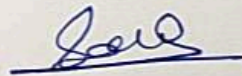
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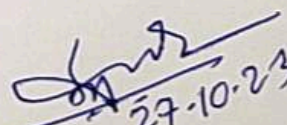
Dr. Bala Ramudu Paramkusam

(Supervisor)



Prof. Shyam Bihari Dwivedi

(Co-Supervisor)


27-10-23

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विभागाध्यक्ष/HEAD
जानपद अभियांत्रिकी विभाग
Department of Civil Engineering
भारतीय प्रौद्योगिकी संस्थान (बी.एच.यू.)
Indian Institute of Technology (B.H.U.)
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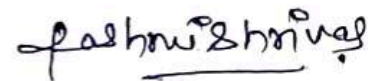
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LIST OF ABBREVIATIONS/ NOTATIONS

M	Molarity of NaOH
GGBFS	Ground Granulated Blast Furnace Slag
MDD	Maximum Dry Density
OMC	Optimum Moisture Content
UCS	Unconfined Compressive Strength
m	% of Pond Ash in Pond Ash-GGBFS Geopolymer
n	% of GGBFS in Pond Ash-GGBFS Geopolymer
a	% of MSW Reject in MSW-GGBFS Geopolymer
b	% of GGBFS in MSW-GGBFS Geopolymer
x	% of Red Mud in Red Mud-GGBFS Geopolymer
y	% of GGBFS in Red Mud-GGBFS Geopolymer
u	% of Pond ash in Pond Ash-Red Mud Geopolymer
v	% of Red Mud in Pond Ash-Red Mud Geopolymer
k	Coefficient of Permeability
XRF	X-Ray Fluorescence
XRD	X-Ray Powder Diffraction
FTIR	Fourier Transform Infrared Spectroscopy
SEM	Scanning Electron Microscopy

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Dr. Bala Ramudu Paramkusam

(Supervisor)

**Department of Civil Engineering
Indian Institute of Technology
(Banaras Hindu University)
Varanasi -221005**

Prof. Shyam Bihari Dwivedi

(Co-Supervisor)

**Department of Civil Engineering
Indian Institute of Technology
(Banaras Hindu University)
Varanasi -221005**

DECLARATION

I, **Rashmi Shrivass**, certify that the work embodied in this thesis is own bonafide work and was carried out by me under the supervision of **Dr. Bala Ramudu Paramkusam** and co-supervision of **Prof. Shyam Bihari Dwivedi** from **21/07/2015** to **31/10/2023** at the **Department of Civil Engineering, Indian Institute of Technology (Banaras Hindu University), Varanasi**. The matter embodied in this thesis has not been submitted for the award of any other degree/diploma. I declare that I have faithfully acknowledged and given credits to the research workers wherever their works have been cited in my work in this thesis. I further declare that I have not willfully copied any other's works, paragraphs, text, data, results, etc., reported in journals, books, magazines, reports, dissertations, theses, etc., or available at websites and have not included them in this thesis and have not cited as my own work.

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It is certified that the above statement made by the student is correct to the best of our knowledge.

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(Supervisor)

Prof. Shyam Bihari Dwivedi

(Co-Supervisor)

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Dedicated to my daughter

Bhargavi Shrivastava

ACKNOWLEDGMENT

As I reach the final frontier of my academic training in what I hope will be a continuation of an interesting and rewarding career in future I would like to acknowledge the support of many without whom this work would not have been possible.

First and foremost, I take this opportunity to thank my supervisor Dr. Bala Ramudu Paramkusam and co-supervisor Prof. Shyam Bihari Dwivedi for their constant support, technical guidance and encouragement throughout this research. This work would not have taken the present shape without their guidance and motivation throughout this work. I thank them profusely from bottom of my heart for their vital role in developing my knowledge and confidence. I wish to extend my sincere gratitude towards my RPEC members, Dr. Gauri S. Prasad Sing, Department of Mining Engineering, IIT (BHU), as an internal expert and Dr. Pabitra Ranjan Maiti, Department of Civil Engineering, IIT(BHU), as an external expert for their help, valuable suggestions and encouragement during entire research work.

I would also like to thank Prof. Sasankasekhar Mandal, Head, Department of Civil Engineering, Indian Institute of Technology (BHU), Varanasi for providing all facilities related to my research work. I wish to express my deep

regards to, Dr. Suresh Kumar, Dr. Supriya Mohanty and Dr. Manas Chakraborty for their unconditional supports at every moment during the progress of my research. I also extend my heartfelt regards to all the faculty members of the Civil Engineering Department.

I am also grateful to our laboratory staff Mr. Basanta Prasad, Mr. Netra Pal, Mr. Deepak Kumar and Mr. Sharda Prasad for the assistance extended by them time to time during this research work. I would also like to thank Mr. Sudhanshu Pal for his constant help throughout my experimental work. I am grateful to all the office staff and authorities of Department of Civil Engineering, for their kind help during the period of my stay to complete the thesis work.

I would also like to express my sincere thanks to Central Instrument Facility Centre, IIT (BHU) and Department of Chemical Engineering, IIT (BHU) for facilitating my research work.

I am thankful to my fellow friends Mrs. Deep Jyoti, Mrs. Ankita Singh, Mrs. Gitanjali Pradhan, Mrs. Devyani Shukla, Mr. Manish Kumar Mandal, Ms. Parul Rawat, Mr. Amit Kumar Ram, Mr. Niteesh Singh Bonal and Mr. Abhay Kumar, for the thought-provoking discussions, their support, cooperation and sincere help in many ways.

I would like to express my heartfelt gratitude to my parents, Mr. Ramdas Shrivasa and Mrs. Ganga Devi Shrivasa, and my in-laws, Mr. Manoj Shrivasa and Mrs. Suman Shrivasa, for their constant and unwavering encouragement and support throughout my academic pursuit. Their love and unwavering support have been a cornerstone of my success. Moreover, I am grateful to my siblings, Mr. Mohit Kumar and Mr. Rohit Shrivasa for their constant affection and encouragement.

Last but not least, I owe a deep sense of gratitude to my husband, Mr. Sumit Kumar Shrivasa, for his immense patience, attention, understanding, and unwavering support in helping me achieve my aspirations.

Lastly, I humbly express my gratitude and reverence to the Almighty for providing me with this exceptional opportunity and empowering my mind to accomplish the tasks entrusted to me.

Rashmi Shrivasa