Curriculum Vitae

Paul Shaji

Paul Shaji
Doctoral Research Scholar (BTCM Division)
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Current affiliation (Sept 2020 – Present)

Paul Shaji is currently a doctoral researcher at the BTCM Division, Department of Civil Engineering, Indian Institute of Technology Madras under QIP. His current research is on Transport of carbon dioxide and chloride ions in Calcium Sulfoaluminate Belite Cement Concrete.

Education

Degree	University	Year	CGPA /percentage
Ph.D.	IIT Madras	2020-	Pursuing
Master of Technology (Construction Technology and Management)	National Institute of Technology Karnataka, India	2013	8.72 CGPA
Bachelor of Technology (civil)	Mar Athanasius college of Engineering Kerala, India	2011	67.80 %
Higher secondary school	Vimalagiri Public School, kerala, India	2007	77.40 %

Previous teaching/research experience

From 2014 to 2020, Paul Shaji worked as an Assistant Professor in the college, Mar Athanasius college of engineering, Ernakulam, India. He handled courses like **Engineering Mechanics**, **Construction management and building materials**, **Concrete technology**, **Construction project management** etc. for undergraduate and postgraduate Civil Engineering students during this period.

Research areas

- Hydration mechanism of Calcium Sulfoaluminate Belite cement (CSAB)
- Influence of gypsum content on the phase assemblage and pore structure of hydrated CSAB cement
- Carbon dioxide and Chloride ion transport in hydrated CSAB cement

Academic research work

1. Carbon dioxide and chloride ion transport mechanisms in calcium sulfoaluminate belite concrete

- *Ph.D. work under the guidance of* Dr. Piyush Chaunsali, *Assistant Professor, Indian Institute of Technology Madras, Chennai, India (ONGOING)*

Calcium sulfoaluminate cement (CSA) is a potential low CO_2 emission alternative to ordinary Portland cement. They are made from calcining of limestone, bauxite, clay, and calcium sulfate at 1250℃ which is about 200℃ lower than the firing temperature in OPC kiln. Moreover, the clinker produced is more friable in comparison to OPC. Hence the overall production-related CO_2 emissions could be reduced by about 30%. Industrial by-products such as red mud, fly ash, blast-furnace slag, etc. can be used to produce CSA cement. Making the cement more sustainable is only the preliminary step in manufacturing. Due consideration should be given to the durability as it affects the service life of structures; otherwise, the positive effects of making the cement sustainable will not be significant. Limited studies are available on the durability aspects of CSA cement compared to OPC, especially in the field of the transport mechanism of gases like CO_2 and chloride ions. A detailed study in this aspect will help us to establish a proper understanding of the effectiveness of CSA cement.

2. Time–cost-risk optimisation in construction using ant colony algorithm

- *M. Tech. project work under the guidance of Dr. Manu, Associate Professor, National institute of Technology Karnataka, Surathkal*

Time, cost and risk are the significant factors that influence the completion of any construction project. Planning each activity in a project considering these three parameters helps, complete the project within budget and time. This work emphasises the optimisation of time-cost-risk trade-off using Ant Colony Optimization. These parameters impact choosing various resource options for every activity in a project, and their relationships are evaluated.

Professional affiliations

- Indian Concrete institute Lifetime member since 2016

Software worked with:

- AutoCAD, STAAD Pro, Sure Track, Microsoft Office

References

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