S. Vaishnav Kumar

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Educational Qualifications:

Degree	Specialization	Board / University	Year	CGPA
Ph.D.	Building Materials	IIT - Madras	Pursuing	
M.Tech	Construction Technology and Management	IIT - Madras	2016	8.62 /10.00
B.Tech	Civil Engineering	NIT - Tiruchirappalli	2014	8.34 /10.00

Research Interests:

Cement Chemistry, Synthesis of cement, Thermodynamic and microstructure modeling of cement hydration

Publications:

Refereed Journal Papers:

- S. Vaishnav Kumar, R. Cepuritis, and P. Chaunsali, "Influence of Exposure Conditions on Expansion Characteristics of Lime-Rich Calcium Sulfoaluminate-Belite Blended Cement," *Cement and Concrete Composites*, Vol. 118, 2021
- P. Chaunsali and S. Vaishnav Kumar, "Calcium Sulfoaluminate-Belite Cements: Opportunities and Challenges," *Indian Concrete Journal*, Vol. 94, Issue 2, February 2020.

Refereed International Conference:

- S. Vaishnav Kumar, R. Cepuritis, and P. Chaunsali, "Influence of External Environment on Early-Age Expansion Characteristics of Calcium Sulfoaluminate Cement-Based Binders," *Microdurability Conference*, The Hague, Netherlands, May 2021.
- M. Suta, R. Cepuritis, S. Vaishnav Kumar, and P. Chaunsali, "On the application of steel fibre reinforced self-stressing concrete (SFRSSC) in watertight concrete structures," *19th International Scientific Conference on Engineering for Rural Development*, Latvia, May 2020.

International Conference Presentation:

- S. Vaishnav Kumar* and P. Chaunsali, "Expansion Characteristics of Calcium Sulfoaluminate (CSA) Blended Cement: Influence of External Sulfates," *74th RILEM Annual Week and 40th Cement and Concrete Science Conference*, University of Sheffield, UK, Aug 31-Sept 4, 2020.

Research projects:

Calcium Sulfoaluminate (CSA) Cements: Synthesis and Properties (Currently working)

- Synthesis of CSA based binders from reagent grade materials and extending to synthesis by using locally available industrial by products.
- Understanding the influence of supersaturation of sulfates on the expansion characteristics of CSA based binders.
- Investigation of CSA on the mechanical and durability characteristics of concrete.

Stress - strain characteristics of high strength concrete (M.Tech Thesis)

- The evolution of compressive strength and elastic modulus, of concretes of grade from M30 to M80 were studied at different ages.
- Obtaining the complete stress-strain response of concrete with a strain controlled closed loop test set up

Study of Energy Dissipation in Thin Webbed Plate Girders (B.Tech Thesis)

- Finite element (FE) model of a thin webbed plate girder was created and analyzed using commercial software package ABAQUS.
- Validation of the FE model was done using experimental results from literature.
- The energy dissipation capacity of the plate girder was compared to that of a hot - rolled section of similar aspect ratio, when subjected to dynamic loading.

Relevant Coursework:

Cement Chemistry (CE6040), Characterization of Construction Materials (CE5950), Modern Techniques of Material Characterization (MM5020), Advanced Concrete Technology (CE6110), Modern Construction Materials (CE5010), Sustainable Construction (CE5014), Maintenance and Rehabilitation of Constructed Facilities (CE5120).

Software worked with:

AutoCAD, STAAD Pro V8i, Revit Architecture, ABAQUS, GEM-Selektor

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Teaching Assistantship:

Cement Chemistry for Dr. Piyush Chaunsali	Jan'21 – May'21
Modern Construction Materials for Dr. Piyush Chaunsali	July'20 – Nov'20
Characterization of Construction Materials for NPTEL**,** IIT Madras	Jan'20 – April'20
Characterization of Construction Materials for Dr. Piyush Chaunsali	July'19 – Nov'19
Advanced Concrete Technology for NPTEL**,** IIT Madras	July'19 – Oct'19
Construction Materials Laboratory course for Dr. Ramamurthy	Jan'19 – May'19
Advanced Concrete Technology for NPTEL**,** IIT Madras	July'18 – Oct'18

Work Experience:

Larsen & Toubro, Head Quarters, Chennai — **Sr. Engineer**, Procurement — Apr '17 – Nov '17

- Identifying the technical and contractual requirements of the project and conduct a preliminary technical pre-bid qualification for the vendors.
- Worked on rate analysis for various activities to support the commercial negotiations.

Larsen & Toubro, Borivali, Mumbai — **Sr. Engineer**, QA/QC on site — Sept '16 – Apr '17

Worked at the Oberoi Sky City Project, construction of a residential building complex with 4 towers of 60 stories each as a part of the first phase.

- Quality control at site for the execution of works at Tower D with the floor area of about 500 m^2.
- Designing and optimizing the concrete mixture proportion for concrete of grade M40 to M80 for the super structure and M50 grade temperature-controlled concrete for mass concreting for the raft foundation.

Awards and Recognitions:

- Received the **Sahara Scholarship** from NCC, for professional courses in the year 2012.
- Received **Certificate of Merit** from CBSE for being in the top 0.1% in AISSCE for Physics in 2010.
- Received **PTA Merit Scholarship** from Kola Perumal Chetty Vaishnav senior secondary school, for Proficiency in Physics in 2009.

Positions of responsibility:

- Secretary PG, Civil Engineering Association (CEA), 2018, IIT Madras.
- Coordinator, Campus Placement Committee - 2010, NIT – Tiruchirappallai
- Coordinator, Moments 2010 – Technical Symposium of CEA, NIT – Tiruchirappallai

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References:

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Dr. Manu Santhanam (Professor)
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