ANUSHA SHIMOGA BASAVARAJ
Doctoral Research Scholar
Department of Civil Engineering
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Academic Information

A Ph.D. student at Indian Institute of Technology Madras working with Prof. Ravindra Gettu on the thesis titled 'Sustainability Assessment of Concrete Systems with Alternative Binders'. This work emphasis the importance of conducting life cycle assessment studies for cement and concrete systems in India and using the eco efficiency parameters for sustainability assessment. A part of the thesis is supported by low carbon cement project (LC3) funded by Swiss Agency for Development and Cooperation (SDC)

Educational Profile

- **Doctor of Philosophy (Civil Engineering),** ***2016 – Present***
  Indian Institute of Technology Madras (IIT Madras)
  Chennai, Tamil Nadu, India
- **Master of Technology (Construction Technology),** ***2013-2015***
  B. M Sreenivasaiah College of Engineering (BMSCE)
  Bengaluru, Karnataka, India
  Thesis title: Studies on Lime Pozzolana Based Geoploymer Bricks Using Tank Bed Soil
- **Bachelors of Technology (Civil Engineering),** ***2008-2012***
  Bangalore Institute of Technology (BIT)
  Bengaluru, Karnataka, India

Academic Excellence

Secured **GOLD MEDAL** from Vishweshwaraya Technological University for scoring highest marks in **Advanced Concrete Technology** in the year 2013.

Awards and Recognitions

- **RILEM- PHD** grant awardee for the year 2021
- Abstract submitted on '**Indexing Concrete Proportions for Sustainability by Integrating Environmental, Mechanical and Durability Parameters'** to Gordon Research Seminar (GRS) held in Ventura, California, USA February - 2020 was selected for **oral presentation**
- Worked as a **guest editor** for a **special issue on 'Sustainability of Concrete Through Blended Binders' - Indian Concrete Journal (ICJ), February - 2020**
- **Secured First rank** in short-term course on '**Advanced Concrete Technology (ACT),'** organized by IIT Madras, Chennai during December.2015.

Experience

Research

- Currently a half time research assistant (HTRA) as a part of Ph.D. program at Indian Institute of Technology Madras
- Project Manager for the LC3 project funded by Swiss Agency for Development and Cooperation (SDC) at IITM from July 2015 to July 2018
- Project Officer in BTCM Division, Department of Civil Engineering, IIT Madras with Prof. Manu Santhanam and Prof. Ravindra Gettu from July 2015 to June 2016
    - Life Cycle Assessment of LC3 Systems in India: This work was extended to be the part of my Ph.D work
    - UKIERI project on Characterization of Interfacial Bond Between Old Concrete Substrate and the Overlay
- Other projects involved during PHD tenure
    - Life cycle assessment of recycled concrete aggregates
    - Life cycle assessment of calcium suplhoaluminate (csa) cements
    - Workability and flow characteristics of blended cements like LC3, PSC and PPC
    - Concrete mix designing for the Chennai airport extension project

Teaching as part of 'Graduate Teaching Assistant'

- Online NPTEL course on 'Introduction to Civil Engineering profession', January – May, 2021
- Online NPTEL course on 'Modern Construction Materials', January – May, 2020
- Online NPTEL course on 'Advances in Science and Technology of Concrete', January – May, 2019
- Post graduate course on Modern Construction Materials, July-November, 2018
- Undergraduate course on Concrete Technology, January – May 2017 and January – May 2020

Lecturer in RR INSTITUTE OF TECHNOLOGY (RRIT), Bangalore, Karnataka, 2012-2013

- Undertook UG and Diploma courses: Concrete Technology, Survey, Mechanics of Materials
- In-charge of survey camp (15 days) conducted for 3rd year UG students and diploma students held at Gaati Subramanya, Karnataka, India

Professional affiliations

- RILEM student member since 2018: 35967
  Key member in organizing the 'International Conference in Advances in Construction Materials, and Systems (ICACMS)' and RILEM week 2017 held in Chennai, India during 2017
- NACE International student member since July 2019: 11159690
    - Organizer of national level workshop on n 'Corrosion Control in Concrete Structures' (C3S) during July 2016 and 2017

- ACI student member since 2018: 1711586

Publications

(a) Referred Journal Papers (Published/Accepted)

1. S. Bhattacherjee, **A. S Basavaraj**, A. V. Rahul, M. Santhanam, R. Gettu, B. Panda, E. Schlangen, Y. Chen, O. Copuroglu, G. Ma, L. Wang, M. A. B. Beigh, and V. Mechtcherine, "Sustainable Materials for 3D Printing", *Cement and Concrete Composites*, DOI: https://doi.org/10.1016/j.cemconcomp.2021. 104156, 122, p. 104156 (2021)
2. R. Gettu, A. Patel, V. Rathi, S. Prakasan, **A.S. Basavaraj**, S. Palaniappan and S. Maity, "Influence of Supplementary Cementitious Materials on the Sustainability Parameters of Cements and Concretes in the Indian Context", *Materials and Structures*, DOI: https://doi.org/10.1617/s11527-019-1321-5, 52:10, 11 p. (2019)
3. R.G. Pillai, R. Gettu, M. Santhanam, S. Rengaraju, Y. Dhandapani, S. Rathnarajan and **A.S. Basavaraj**, "Service Life and Life Cycle Assessment of Reinforced Concrete Systems with Limestone Calcined Clay Cement (LC3)", *Cement and Concrete Research*, DOI: https://doi.org/10.1016/j.cemconres.2018.11.019, 118, p. 111-119 (2019)
4. R. Gettu, R.G. Pillai, M. Santhanam, **A.S. Basavaraj**, S. Rathnarajan and B.S. Dhanya, "Sustainability-Based Decision Support Framework for Choosing Concrete Mixture Proportions", *Materials. And Structures*, DOI: https://doi.org/10.1617/s11527-018-1291-z, 51:165, 16 p. (2018)

(b) Full Paper(s) Published in Conference Proceedings

1. R. Gettu and **A.S. Basavaraj,** "Life Cycle Assessment of LC3: Parameters and Prognoses", Proc. 3rd Intnl. Conf. on Calcined Clays for Sustainable Concrete (Delhi), Vol. I, Eds. A. Parashar, L. Singh and Gopala Rao D., pp. 261-265 (2019); Ed. S. Bishnoi, Calcined Clays for Sustainable Concrete, RILEM Bookseries 25, https://doi.org/10.1007/978-981-15-2806-4_32, pp. 277-281 (2020).
2. R. Gettu, M. Santhanam, R.G. Pillai, Y. Dhandapani, T. Sakthivel, S. Rengaraju, S. Rathnarajan, M. Fathima Suma, **A.S. Basavaraj,** S. Prakasan and V.G. Nithya Nair, "Summary of 4 years of Research at IIT Madras on Concrete with Limestone Calcined Clay Cement (LC3)", *Proc. Intnl. Conf. on Sustainable Materials, Systems and Structures (SMSS 2019). Vol. 1. New Generation of Construction Materials* (Rovinj, Croatia), Eds. M. Serdar, N. Štirmer and J. Provis, ISBN: 978-2-35158-223-7, PRO 128, RILEM Publications S.A.R.L., Paris, pp. 449-456 (2019).
3. R. Pillai, M. Santhanam, R. Gettu, Y. Dhandapani, S. Rengaraju, S. Rathnarajan, and **A. S. Basavaraj,** "Service Life Estimation and Life Cycle Assessment for Portland Cement, Fly Ash, and LC3 Systems", *Service-Life Prediction of Concrete, Proc. 3rd Meeting: The Corvallis Workshops* (Corvallis, Oregon, USA), Eds. K.S.T. Chopperla, T.J. Deboodt and J.H. Ideker, 5 p. (2017).
4. R. Gettu, M. Santhanam, R.G. Pillai, Y. Dhandapani, T. Sakthivel, S. Rengaraju, M.F. Suma, S. Prakasan, S. Rathnarajan and **A.S. Basavaraj**, "Recent Research on Limestone Calcined Clay Cement (LC^3) at IIT Madras", *Book of Abstracts - Conf. in Honor of Centennial of Laboratory of Construction Materials and 60th Birthday of Prof. Karen Scrivener* (Lausanne), Ecole Polytechnique Federale de Lausanne, Switzerland, pp. 76-79 (2018).

5. R. Gettu, R.G. Pillai, M. Santhanam, S. Rathnarajan, **A.S. Basavaraj**, S. Rengaraju and D. Yuvaraj, "Service Life and Life-Cycle Assessment of Reinforced Concrete with Fly Ash and Limestone Calcined Clay Cement", *Proc. Sixth International Conference on Durability of Concrete Structures* (Leeds), United Kingdom, pp. 27-35 (2018); https://docs.lib.purdue.edu/icdcs/2018/keynote/1/
6. R. Gettu, R.G. Pillai, J. Meena, **A.S. Basavaraj**, M. Santhanam and B.S. Dhanya, "Considerations of Sustainability in the Mixture Proportioning of Concrete for Strength and Durability", 2nd Intnl. Workshop on Durability and Sustainability of Concrete Structures (Moscow, Russia), 11 p. (2018); also in *Durability and Sustainability of Concrete Structures (DSCS-2018), Proc. 2nd Intnl. Workshop*, Eds. V. Falikman, R. Realfonzo, L. Coppola, P. Hàjek and P. Riva, SP-326, ISBN: 9781641950220, American Concrete Institute, pp. 5.1-5.10 (2018).
7. R. Gettu, A. Patel, V. Rathi, S. Prakasan, **A.S. Basavaraj** and S. Maity, "Sustainability Assessment of Cements and Concretes in the Indian Context: Influence of Supplementary Cementitious Materials", *Proc. Fourth Intnl. Conf. on Sustainable Construction Materials and Technologies (SCMT4)* (Las Vegas, USA), Eds. N. Ghafoori, P. Claisse, E. Ganjian and T.R. Naik, paper S299, pp. 1142-1150 (2016).

(c) Posters

1. R. Gettu, S. Prakasan, V. Rathi and **Anusha S. B,** "Critical parameters in life cycle assessment of cement- based systems", 2nd International Conference on Calcined Clay for Sustainable Concrete", 5th -7th December, 2017, Havana, Cuba.
2. **Anusha S. B** and Ravindra Gettu, "Life cycle assessment of typical cements in Indian Context" Concrete Research in India – Research Scholar Symposium, IIT Bombay, 13th December, 2018, Mumbai, IN
3. **Anusha S. Basavaraj** and Ravindra Gettu, "Environmental impact assessment of cements in India – Needs, Progress and Challenges", 23rd–28th February 2020, Gordon Research Conference, Ventura, CA, USA

Invited Talks/Presentations:

- Delivered a talk on **'Sustainability Assessment of Concrete Systems'** to the post graduate students in IITM as a part of the 'Advanced Concrete Technology' course in April, 2021
- Delivered a talk on '**Sustainability of Concrete through Durability'** in a Faculty Development Program, organized by R. R. Reddy College, Bangalore, India. June, 2020
- Delivered a talk on '**Life cycle assessment of cement: Introduction'** to the undergraduate students in IITM as a part of the 'Concrete Technology' course in April, 2020
- Delivered a talk on '**Life Cycle Assessment of Blended Concrete Systems'** in short-term course on 'Advanced Concrete Technology (ACT),**'** organized by IIT Madras, Chennai during November, 2019
- Delivered a talk on 'Life cycle assessment of cement: Introduction' to the post graduate students in IITM as a part of the 'Advanced Concrete Technology' course in April, 2019
- Delivered a talk on 'Life cycle assessment of cement: Introduction' to the students of civil engineering at New Horizon College of Engineering, Bangalore, Karnataka, India in September, 2018

Fellowships/Internships

- Industrial training in L & T construction (Prestige Sunrise park), Bangalore, Karnataka, India during the year 2014 (June and July)

Short Courses/Certified Programs

- Participated in 2nd Doctoral School on LC3 held at EPFL, Laussane, Switzerland in May 2016
- Participated in a short-term course on 'Advanced Concrete Technology (ACT),' organized by IIT Madras during December 2015 and secured first rank
- Participated in a short-term course on 'Planning, Construction, and Engineering concept of Matro Rail' conducted by Bangalore Metro Rail Corporation Limited in May 2015

Co-curricular Activities

- Volunteered for teaching students at government schools in rural areas of Tamil Nadu under One Lab–One School program during the year 2019-2020 and online course during June - October 2020
- Students elected General Secretary for Sarayu Girls hostel, IIT Madras during the year 2016-2017
- Assistant warden for Sarayu Girls hostel, IIT Madras during the year 2015-2016
- Performed 'Yakshagana' - traditional folk dance of the state of Karnataka in the National level dance competition held at Kanteerava Stadium Bengaluru, Karnataka, India in the year 2002
- Participated in district level sports (400 meters running) during the year 2001-2002
- Participated in several dance performances in school annual day programs since 1995 to 2006

References

1. Prof. Ravindra Gettu
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   IIT Madras, Chennai, TN, India
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2. Prof. Manu Santhanam
   Department of Civil Engineering
   IIT Madras, Chennai, TN, India
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