

# Egodawaththa Ralalage Kanishka Chandrathilaka

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## EDUCATION

<b>THE UNIVERSITY OF MELBOURNE</b> Ph.D., Infrastructure Engineering Thesis title: <i>Investigation of Molecular Behaviour of Nanomaterial Reinforced Calcium Silicate Hydrate and Nano-Structure Modifications</i>	Melbourne, Australia February, 2024
<b>THE UNIVERSITY OF MORATUWA</b> M Sc, Civil Engineering (Major Component Research) Thesis title: <i>Bond Performance of CFRP/Steel Composite at Elevated Temperatures</i>	Moratuwa, Sri Lanka January 2019
<b>THE UNIVERSITY OF MORATUWA</b> B Sc Eng Hons, Civil Engineering First Class, GPA – 3.84	Moratuwa, Sri Lanka October 2017
<b>D. S. SENANAYAKE COLLEGE</b> Advanced Levels, 3 A's, Island 8 <sup>th</sup> (Z-score – 3.1513) Ordinary Levels, 9 A's	Colombo 7, Sri Lanka August 2011 December 2008

## PROFESSIONAL RESEARCH EXPERIENCE

<b>SENIOR LECTURER (GRADE II), CIVIL ENGINEERING</b> The University of Moratuwa	August 2024 – to date Moratuwa, Sri Lanka
<ul style="list-style-type: none"><li>▪ Finite element modelling of textile reinforced concrete and hempcrete composite members</li><li>▪ Development of machine learning algorithms to predict the mechanical behaviour of steel/CFRP and concrete /CFRP lap shear joints</li></ul>	
<b>CONTRACT LECTURER, CIVIL ENGINEERING</b> The University of Moratuwa	March 2023 – August 2024 Moratuwa, Sri Lanka
<ul style="list-style-type: none"><li>▪ Development of sustainable paving blocks using granulated steel slag and crushed tile waste as partial replacement of aggregates</li><li>▪ Non-linear finite element modelling of textile reinforced concrete</li></ul>	
<b>PHD CANDIDATE, INFRASTRUCTURE ENGINEERING</b> The University of Melbourne	February 2019 – August 2023 Melbourne, Australia
<ul style="list-style-type: none"><li>▪ Development of Molecular Dynamics (MD) simulations to understand the behaviour of Carbon Nanotubes (CNT) and Graphene Oxide (GO)-reinforced Calcium Silicate Hydrate (C-S-H) with a variety of parameters</li></ul>	

- Use of a new Reactive Force Field (ReaxFF) to accurately predict the GO behaviour in cementitious materials at the molecular level
- Create more realistic C-S-H structure using Grand Canonical Monte Carlo (GCMC) simulation
- Chemical characterization CNT and/or GO-reinforced high-performance cementitious material behaviour

**RESEARCH ASSISTANT, INFRASTRUCTURE ENGINEERING**

January 2021 – June 2022

The University of Melbourne

Melbourne, Australia

Advanced Circular Polymer (ACP)

Melbourne, Australia

- Development of AI data collection framework and execution for AI-based plastic sorting machinery
- Improving the Process Diagram for AI AI-based plastic sorting process
- Development of plastic flake quality analysis and water quality testing framework for plastic flake washing procedure
- Development of image processing technique for evaluating plastic flake quality

**RESEARCH ASSISTANT/ MSC CANDIDATE, CIVIL ENGINEERING**

April 2017 – January 2019

The University of Moratuwa

Moratuwa, Sri Lanka

- Evaluation of performance of steel/CFRP bond cured and tested at elevated temperature
- FE modelling on the performance of steel/CFRP bond cured and tested at elevated temperature
- Numerical analysis of fire performance of CFRP-strengthened steel I beams cured at elevated temperature

**TEACHING EXPERIENCE**

**THE UNIVERSITY OF MORATUWA**

Moratuwa, Sri Lanka

- *Structural Dynamics and Control* / MSc -PG Dip in Structural Engineering - Lecturer (on Contract)
- *Computing for Civil Engineering* / B Sc Eng – Lecturer (on Contract)
- *Design of Large Structures* / B Sc Eng – Lecturer (on Contract)
- *Building Construction and Materials* / B Sc Eng – Lecturer (on Contract)
- *Construction Management* / B Sc Eng – Senior Lecturer (Grade II)
- *Design of Timber and Masonry Structures* / B Sc Eng – Senior Lecturer (Grade II)

**THE UNIVERSITY OF MELBOURNE**

Melbourne, Australia

- *Statics (ENGR10005\_SM2)* / M Sc Eng - Tutor
- *Integrated Design - Civil (CVEN90060\_SM2)* / M Sc Eng - Tutor

**THE UNIVERSITY OF MORATUWA**

Moratuwa, Sri Lanka

- *Design of Concrete Structures I* / B Sc Eng - Tutor
- *Structural Mechanics* / B Sc Eng - Tutor
- *Building Construction and Materials* / B Sc Eng – Instructor

**CINEC CAMPUS (PVT) LTD**

Malabe, Sri Lanka

- *Advanced Structural Analysis and Design* / M Eng – Lecturer

- *Concrete Design* / Diploma in Civil Engineering – Lecturer

## SCHOLARSHIPS AND AWARDS

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| ▪ President's Award for Scientific Research | 2019 |
| ▪ Melbourne Research Scholarship            | 2018 |
| ▪ Mahapola Higher Education Scholarship     | 2013 |

## PUBLICATIONS

### Journal publications (First author only)

- Chandrathilaka, E. R. K., Gamage, J. C. P. H., & Fawzia, S. (2019). Mechanical characterization of CFRP/steel bond cured and tested at elevated temperature. *Composite Structures*, 207, 471-477.
- Chandrathilaka, E. R. K., Gamage, J. C. P. H., & Fawzia, S. (2019). Numerical modelling of bond shear stress slip behavior of CFRP/steel composites cured and tested at elevated temperature. *Composite Structures*, 212, 1-10.
- Chandrathilaka, E. R. K., Baduge, S. K., Mendis, P., & Thilakarathna, P. S. M. (2021). Structural applications of synthetic fibre reinforced cementitious composites: A review on material properties, fire behaviour, durability and structural performance. In *Structures* (Vol. 34, pp. 550-574). Elsevier.
- Chandrathilaka, E. R. K., Baduge, S. K., Mendis, P., & Thilakarathna, P. S. M. (2020). Flexural Performance of Prefabricated Ultra-High-Strength Textile Reinforced Concrete (UHSTRC): An Experimental and Analytical Investigation. *Buildings*, 10(4), 68.
- Chandrathilaka, E. R. K., Gamage, J. C. P. H., & Fawzia, S. (2018). Effects of Elevated Temperature Curing on Glass Transition Temperature of Steel/CFRP Joint and Pure Epoxy Adhesive. *Electronic Journal of Structural Engineering*, 18(2), 1-6.

### Conference publications (First author only)

- Chandrathilaka, E. R. K., & Gamage, J. C. P. H. (2018, December). Fire performance of CFRP-strengthened steel I beams cured at elevated temperature. In *International Conference on Sustainable Built Environment* (pp. 526-537). Springer, Singapore.
- Chandrathilaka, E. R. K., Perera, U. N. D., & Gamage, J. C. P. H. (2018). Bond slip models for corroded steel-CFRP double strap joints. In *6th International Symposium on Advances in Civil and Environmental Engineering Practices for Sustainable Development (ACEPS-2018)*.
- Chandrathilaka, E. R. K., Gamage, J. C. P. H., & de Silva, L. I. N. Effects of Shape of Cross Section on Performance of Circular Piled Raft Foundation. *8th International Conference on Structural Engineering and Construction*, 24, 78-5.