Editorial

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I wrote my first editorial as Chairman of the Editorial Advisory Panel for the *Construction Materials* journal in April 2013. After nearly five years in this role I am standing down to pass on the privilege and responsibility to Dr Mohammed Sonebi. Over the past 5 years the journal has continued to publish six issues every year whilst diversifying its content to include a wider representation of conventional and non-conventional construction materials. This has seen the number of papers on cementitious and concrete materials proportionally reduce and the journal publish a number of special issues, including editions on timber engineering, earthen construction and asphalt materials. At the start of 2018 the journal continues to attract high quality submissions from authors around the globe and it has a very healthy number of papers in the production process. In achieving this I would like to take the opportunity to thank the production team at ICE Publishing, in particular Rebecca Rivers, Gene Seabolt and Ben Ramster, the other members of the Editorial Advisory Panel, and finally the many reviewers without whose work the journal simply could not function.

Construction materials are to be found in a wide range of applications and environments, including buildings, transport infrastructure, energy production, flood and coastal protection, and water treatment and distribution. Materials still have a significant role in reducing carbon dioxide and other greenhouse gas emissions, as this still remains a key challenge for humanity. Recent figures suggest that after some years of decline greenhouse gas emissions are increasing once more; we still have much to do. Construction materials, and the products and infrastructure they produce, must be increasingly resilient to the environmental, social, economic, technological, and demographic challenges humanity faces. Alternatives to non-renewable supply chains are necessary; greater reuse and recycling of materials is essential; alternative uses for current waste streams, such as plastics for example, is urgently needed; sustainable supply chains, that enhance natural environments and supports sustainable food production, are a must. The papers submitted and published in this journal represent some of the diverse research and innovation currently on-going in construction materials. It is of course essential that we fully understand the short-term and long-term effects of these new materials before their widespread adoption by industry. This journal

continues to fulfil the essential role of disseminating research findings on international construction materials to wider audience.

This latest edition of *Construction Materials* demonstrates well the wide diversity of research and innovation papers published in recent years. The first paper by Chhorn and Lee (2018) presents findings on their study on the compressive strength of roller-compacted concrete in South Korea. As a result of the much lower initial water content, roller-compacted concrete is a much drier mixture of cement, aggregates, additives and water than most other concretes. Consequently placement is by roller compaction, with applications for pavements and mass concrete dam construction. In their study Chhorn and Lee (2018) have focussed on the influence of constituent material properties and proportions on compressive strength performance. A variety of mixes were prepared in the laboratory and strength properties measured at 3, 7, 28 and 56 days.

In the second paper Concu *et al.* (2018) explore the potential for using Sardinian maritime pine in cross-laminated timber. Cross-laminated timber is an engineered wood product produced by gluing together layers of sawn cut timber, with each layer of wood oriented perpendicular to its adjacent layers. The mechanical and movement properties of cross-laminated timber are superior those of the constituent material and most forms of sawn cut wood too. Available in large sheets cross-laminated timber has become increasingly popular in recent years for larger timber projects, including high-rise timber buildings. The paper presents findings from strength grading tests followed by results from some preliminary cross-laminated timber board tests. Concu *et al.* (2018) have concluded that the source material available on Sardinia is suitable for cross-laminated timber production, but for large scale manufacture forest management practices should improve to reduce the rejection rates found due to the amount of defects.

The third paper in this edition returns to the theme of pavement materials, but rather than concrete Kuna *et al.*'s (2018) work is focussed on pavements including foamed bitumen. The paper presents results from a novel uniaxial indirect tensile fatigue test on different pavement mixtures. The authors then proceed to develop a more robust design approach, termed the

‘cumulative damage approach’ that seeks to better correlate measured laboratory test performance and expected in-service performance.

The final paper by Leiva *et al.* (2018) presents work developing wall panels and fire protection coatings incorporating by-products from coal combustion processes (fly ash and flue gas gypsum). The authors tested a variety of different fly ash and gypsum mixtures to measure physical, mechanical and fire resistance properties. In comparison with existing commercial gypsum products the new materials provided improved thermal insulation, though in contrast mechanical properties were reduced.

Thank you taking the time to read my editorial. I hope you enjoy the latest edition of *Construction Materials*, and the journal always welcomes your feedback.

REFERENCES

- Chhorn C and Lee SW (2018) Influencing compressive strength of roller-compacted concrete. *Proceedings of the Institution of Civil Engineers – Construction Materials* **171**(1): 3–10, <https://doi.org/10.1680/jcoma.16.00009>.
- Concu G, De Nicolo B, Fragiocomo M, Trulli N and Valdes M (2018) Grading of maritime pine from Sardinia (Italy) for use in cross-laminated timber. *Proceedings of the Institution of Civil Engineers – Construction Materials* **171**(1): 11–21, <https://doi.org/10.1680/jcoma.16.00043>.
- Kuna K, Airey G and Thom N (2018) Structural design of pavements incorporating foamed bitumen mixtures. *Proceedings of the Institution of Civil Engineers – Construction Materials* **171**(1): 22–35, <https://doi.org/10.1680/jcoma.16.00039>.
- Leiva C, Arenas C, Alonso-Fariñas B *et al.* (2018) Fire-resistant panels composed only of combustion by-products. *Proceedings of the Institution of Civil Engineers – Construction Materials* **171**(1): 36–44, <https://doi.org/10.1680/jcoma.16.00018>.