

# Editorial

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Greetings to all our readers. As always, *Construction Materials* seeks to publish original research and practice papers of the highest quality on procurement, specification, application, development, performance, and evaluation of materials used in construction and civil engineering. The journal is as relevant as ever and is at the forefront of dissemination of cutting-edge knowledge and is committed to publishing excellent articles. Our peer review system is completely online; processing of manuscripts is getting faster and the best of research in construction materials gets published – thanks to a fantastic editorial team. Furthermore, Emerald Publishing stands for the highest standards of publication ethics and has a track record of promoting research advancing several societal issues.

This July 2025 issue of *Construction Materials* is a blend of five papers encompassing an opening paper on use of a lightweight aggregate in geotechnical applications; three other papers deal with ground granulated blast furnace slag (GGBS) as the common denominator, and the closing paper explores possibilities for data science and machine learning in concrete technology – both science and application.

The leading paper by Elhusain and Standing (2025) is an exhaustive treatment of the pore- and density-related characteristics of a commonly available factory-made lightweight aggregate. By resorting to imaging techniques (Figure 1) and other test methods, the authors have done an in-depth study on the micro and macro pores and time-dependent water absorption under negative, atmospheric and elevated pressures; hence, this paper should serve as a useful reference on this lightweight aggregate type for researchers working in either concrete technology or ground engineering.

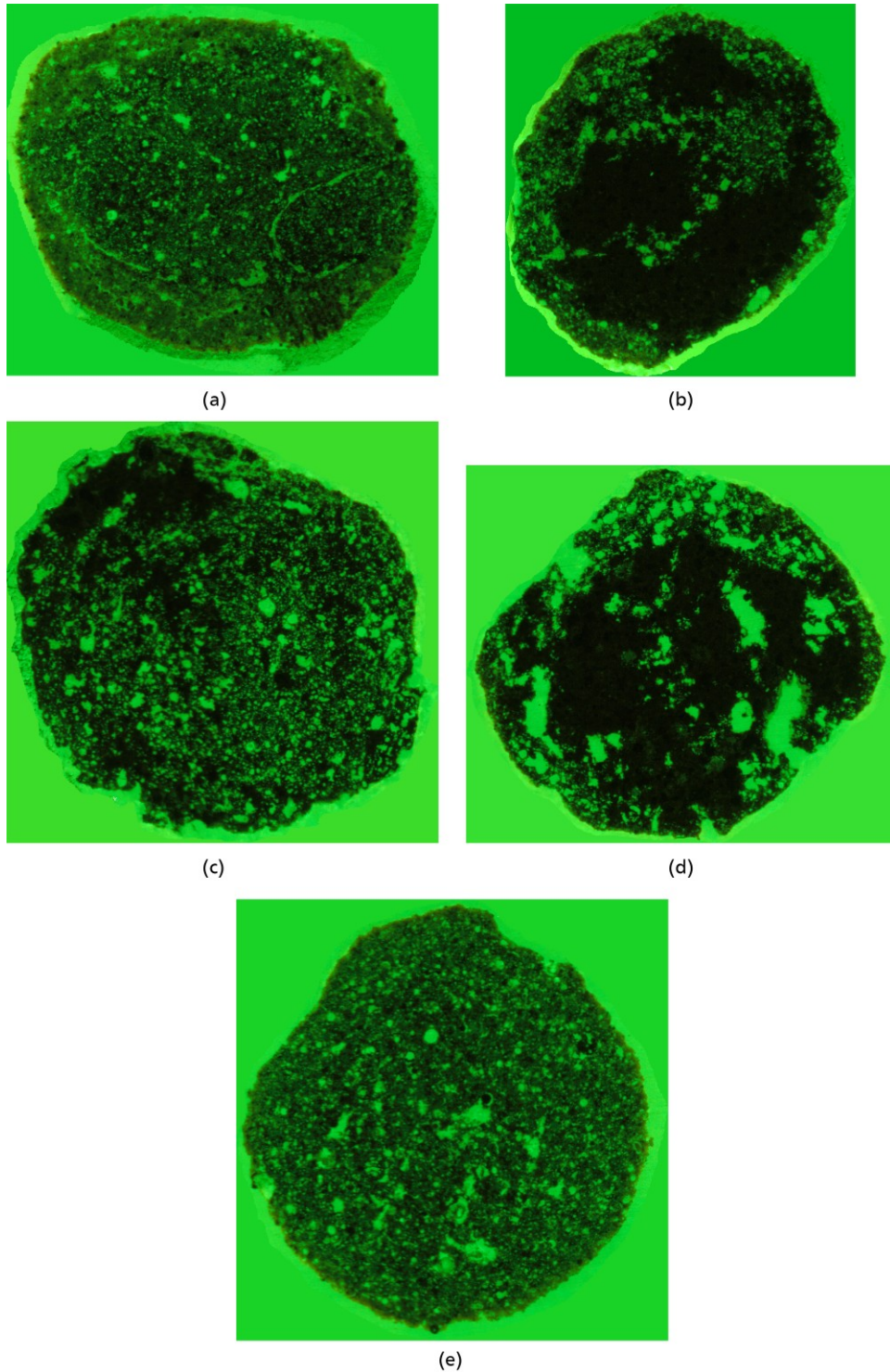
Major steel making factories are based in countries such as China and India, and blast furnace technology is commonly used for producing steel, leading to the generation of waste in the form of molten slag, which is then ground further to a product named as GGBS. It is predominantly used for enhancing durability of

concrete in structures along the coast and for marine infrastructure in onerous service conditions. Given the abundance of GGBS in China and India, it is effectively utilised in concrete production to create a low-carbon concrete infrastructure at a much lower unit cost relative to pure Portland cement concrete, with the added benefit of durability resistance built in. This approach is in sync with the guidance document endorsed by the Institution of Structural Engineers in the UK. At the current market rates in India, GGBS costs approximately 60% of the cost of Portland cement. Given this scenario, the paper by Li *et al.* (2025) makes a significant case for use of GGBS in soil stabilisation in large geotechnical applications with the help of low-cost activators sodium hydroxide and sodium silicate. The authors have demonstrated the effectiveness of low-cost activators instead of relying on Portland cement, and this directly promotes sustainable utilisation of resources and massive cost savings in large projects, especially in regions where GGBS is locally available.

The paper by Yadav *et al.* (2025) expands on the possible use of ultrafine GGBS and recycled refractory brick to create a refractory concrete material that is shown to withstand temperatures up to 400°C. Chimegave *et al.* (2025) explores the potential use of flue gas desulfurisation gypsum in combination with GGBS towards a sustainable low-carbon concrete construction.

Barbhuiya *et al.* (2025) review the methodologies behind data science application in concrete science from microstructure development to the hardened state in terms of compressive strength, durability and so on. While the paper delves on various facets of data collection, data processing and prediction techniques, it also points to the importance of domain expertise in handling the entire data spectrum effectively.

Hope you enjoy reading this issue and are encouraged to discuss all the papers further. If you are interested to contribute a manuscript for this journal, please feel free to visit the Emerald



**Figure 1.** Stereo-microscope images of cross-sections of a selection of fine Lytag particles (note that apparent outer layers sometimes visible are artificial relics from the original images); particle diameters range from roughly from 6 to 10 mm (Elhusain and Standing, 2025)

Publishing website <https://www.emeraldgroupublishing.com/journal/jcoma>.

Stay safe and healthy.

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