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Editorial

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On behalf of the Editorial Board of *Geotechnical Research* (GeoRes), we welcome our readers to the first issue of volume 8 (2021). GeoRes, being the first gold open access (OA) journal of the Institution of Civil Engineers, strives to disseminate impactful geotechnical knowledge to the community that we serve. Readers are welcome to download, distribute and share copies of GeoRes research articles with their colleagues to enhance collaboration. GeoRes also offers a range of discounts for disadvantaged groups of researchers, particularly researchers from International Network for the Availability of Scientific Publications (INASP) countries. It is hoped that such a discount policy will partially eliminate the economic barrier for disseminating quality research output from developing countries. It is indeed pleasing to note the increased interactions from our readers, authors, reviewers and our international editorial board members (at least 15 countries), making GeoRes a truly international and interactive journal. We would like to acknowledge the increased contributions from the fast-growing regions of Asia Pacific, Africa and the Arabian Peninsula, propping up the traditionally strong contributions from Europe and North America. We would also like to thank our readers for their continuing readership, citations and recommendations to peers.

As a recap to another successful year – 2020 – we have seen publications in several key areas such as innovative ground soil improvement work (Ciardi *et al*., 2020; Feng *et al*., 2020; Guo *et al*., 2020a; Weng *et al*., 2020; Xie *et al*., 2020), complex soil–structure interaction (Ge *et al*., 2020; Guo *et al*., 2020b; Shiau and Hassan, 2020; Xu *et al*., 2020; Zhang, 2020) and reliable laboratory testing/model development (Li *et al*., 2020; O'Kelly and Nogal, 2020; Osman *et al*., 2020) alongside other interesting topics.

The first issue of volume 8 (2021) includes three practical geotechnical engineering articles related to construction challenges and data analysis.

Wang *et al*. (2021) discuss a unique modified Biot's model to consider the hydromechanical behaviour of the Callovo-Oxfordian Argillite (COx) claystone, which has a tendency to demonstrate significant deformations during saturation and resaturation cycles. Uniaxial and triaxial compression tests were conducted and it was evidenced that suction pressures increased the interfacial adhesion amongst the clay grains – that is, increased/reduced the COx strength at low/high relative humidity, respectively. With the model developed being able to (*i*) adhere to the mechanical evolution of crack width behaviour and (*ii*) subscribe to time-dependent saturation changes, tunnels and underground nuclear waste disposal facilities could be simulated within the COx geology.

Due to on-site construction requirements for rapid detection of soluble salt ion contents in soils, Feng and Liu (2021) examined a portable equipment that acts as a conductivity meter and water quality analyser. The fundamental principle involves assessing the conductive effect of electrolyte in the soil extraction solution – that is, the more the dissolved salts, the greater would be the conductivity. The experimental results developed by way of regression technique eventually confirmed the accuracy of the electrical conductivity to detect the degree of soil salinisation. Being mobile, the equipment has many uses at construction sites requiring the salinity of soils to be ascertained quickly and reliably.

Inazumi *et al*. (2021) employed a moving-particle semi-implicit–computer-aided engineering (MPS-CAE) technique to analyse the stress-induced mechanism applied to an existing pile when an over-sized steel casing was installed into the ground 'encapsulating' the existing pile with the purpose of safely removing it to minimise remnants of broken piles. Such application is particularly useful in Japan and South-east Asia, which are dominated by soft soils and seismicity that may cause structural damage to existing foundations or when an infrastructure renewal process is required to build on existing plots of land. A basic process involves discharging and rotating the drilling fluid (water or bentonite) at great speed in the annulus between the over-sized steel casing and the existing pile, thus causing 'ripping' torsional stresses on the existing pile shaft for effective detachment. The analytical method is expected to be further improved when reliable field data of plastic viscosity values of the drilling fluid can be confidently ascertained.

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