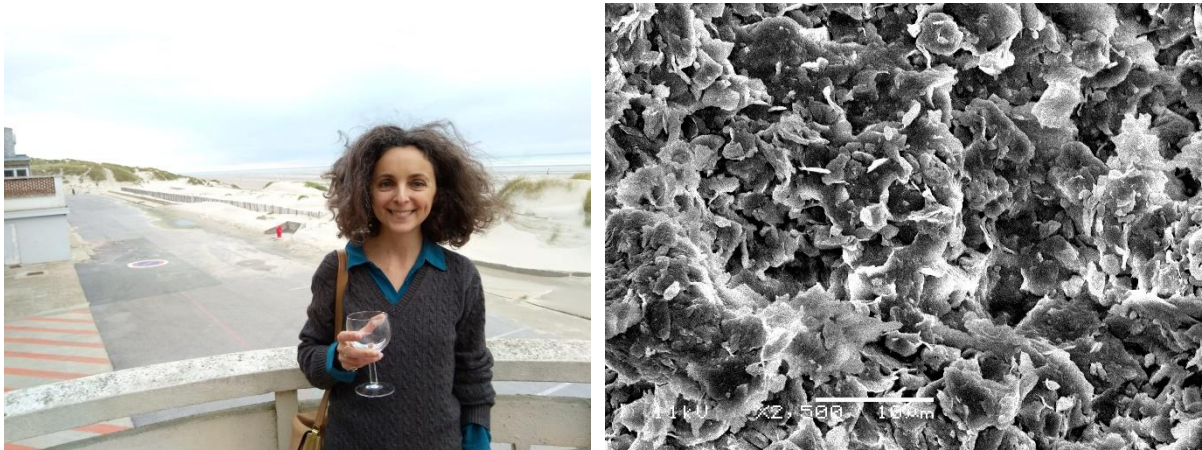


Béatrice Baudet Géotechnique Lecture: Clay behaviour through the keyhole

Tuesday (4th November) at the Institution of Civil Engineers, London at 18:30 UK

Further information and registration (free) for online attendance (or in person) at:

<https://www.britishgeotech.org/event/2025-geotechnique-lecture/>



Summary:

Our current understanding of clay behaviour is mostly phenomenological, and this determines and perhaps limits how we can design geotechnical structures in clays. Characterising soil at the microscale allows us to move away from phenomenological approaches towards more physics-based models. Significant advances have been made in modelling granular soils as discrete elements, in which the soils are represented by grain assemblies, now with more realistically-shaped particles and improved contact models. Using the same approach on clays is more difficult, their particles being much smaller and not so easily identified, while attractive-repulsive surface forces govern their behaviour. While a significant amount of work, often pioneering, has been published linking the micro- to macro-behaviour of clays along compression paths, the current research effort is to model clays as clay grain assemblies using the discrete element or molecular dynamics methods. In a quite different light this lecture will show how the behaviour observed at the macroscale in compression and shearing may be simply linked to clay pore properties measured at the microscale. This not only provides insights into the critical state-type of behaviour we are familiar with but also can improve significantly our understanding of clay behaviour while inspiring new directions to model them.