frontiers | Frontiers in Materials

TYPE Editorial
PUBLISHED 07 June 2023
DOI 10.3389/fmats.2023.1229002

OPEN ACCESS

APPROVED BY
Frontiers Editorial Office,
Frontiers Media SA, Switzerland

*CORRESPONDENCE
John L. Provis,
j.provis@sheffield.ac.uk

RECEIVED 25 May 2023
ACCEPTED 01 June 2023
PUBLISHED 07 June 2023

CITATION
Provis JL and Zhou X (2023), Editorial: Editors' showcase: structural materials. *Front. Mater.* 10:1229002. doi: 10.3389/fmats.2023.1229002

Editorial: Editors' showcase: structural materials

John L. Provis[1]* and Xiangming Zhou[2]

[1]Department of Materials Science and Engineering, University of Sheffield, Sheffield, United Kingdom, [2]Department of Civil and Environmental Engineering, College of Engineering, Design and Physical Sciences, Brunel University London, Uxbridge, United Kingdom

KEYWORDS

editorial, structural materials, showcase, construction, engineering

Editorial on the Research Topic
Editors' showcase: structural materials

We are very pleased to present this Research Topic that highlights some of the outstanding work of the editorial team of the Structural Materials section of *Frontiers in Materials*. The breadth and depth of expertise featured in our editorial board is clearly evident in this Research Topic of articles, which range in topics from rock mechanics to cement chemistry, and from metallurgy to materials synthesis. Looking back to the opening of the Structural Materials section and the featured "Grand Challenges" article published in 2015 (Provis, 2015), it is striking that the topics featured in this Showcase Research Topic are very well aligned with the Grand Challenges of the section: bottom-up materials design, sustainable materials supply, and durability under extreme conditions. These areas—And with additional focus now on digitalisation—Continue to set the agenda for research in the field of structural materials.

Introducing each of the Research Topic articles in turn: Zhang et al. have presented an innovative strength model based on fracture theory for the backfill-rock interface, which is important in ensuring safety and efficiency in extractive industries. Zhao has defined a new process route for large-scale synthesis of metal-organic frameworks that can be used as sorbents and catalysts for industrial decarbonisation. Xie et al. have developed new insight into the degradation, at various scales, of aircraft turbine blades, which takes place under extremely challenging service conditions, raising important recommendations for materials assessment and test protocol design. Wisniewski and Ducman have assessed alkali-activated cementitious materials as inorganic adhesives for a wide range of substrates, reaching very good performance in cases where the adhesive and substrate were highly compatible and identifying further opportunities to analyse interfacial binding and compatibility. Finally, Gong et al. applied density functional theory-based modelling to probe the essential chemical-level interactions that control many aspects of the formation, strength, and stability of aluminosilicate

cements and glasses, and generated a methodology for rapid prediction of binding energies.

We trust that this Research Topic will be of high interest to the readership of *Frontiers in Materials*, and will continue the journal's well-established track record as an outlet for high-quality and insightful research.

Author contributions

JP: writing—Original draft XZ: writing—Review and Editing. All authors contributed to the article and approved the submitted version.

Reference

Provis, J. L. (2015). Grand challenges in structural materials. *Front. Mater.* 2. doi:10.3389/fmats.2015.00031

Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

Publisher's note