

## EDITOR'S NOTE

This special issue of the *Building Research Journal* is devoted to the 60<sup>th</sup> anniversary of its publishing by the Institute of Construction and Architecture of the Slovak Academy of Sciences. During the whole history of journal the basic activity of its publishing institution was the fundamental research in the fields of applied mechanics, construction engineering and material engineering, which determined the scope of journal from the very beginning. Therefore this jubilee issue is focused on some topical themes in building research within the above mentioned fields represented by several papers selected from the contributions of researchers working at the Institute of Construction and Architecture.

In the field of applied mechanics a rapid development of various meshless computational methods with applications to a wide variety of scientific and engineering problems has been observed recently. The Institute of Construction and Architecture has taken part in this development since its early stage by contributions devoted to a numerical study of functionally graded materials and crack problems (1, 2). Very excellent results have been achieved in the development of meshless formulations for piezo-elasticity problems (3, 4) as well as other applications to engineering problems with paying attention to some mathematical aspects of the computational methods, such as a numerical stability, convergence of accuracy, and computational efficiency.

In the field of construction engineering a fundamental research of the reliability and optimisation of steel, aluminium and carbon fibre reinforced composites products focuses on the implementation of the results into backgrounds and guidance to standards. In the field of stability of thin-walled structural components, the results obtained for steel are aimed at the application to carbon fibre reinforced composites (5). The contemporary research is also oriented towards the optimisation of design and utilisation of structures in their lifetime. This includes an investigation of the actual load carrying capacity of existing structures, nowadays unknown to a large extent, and their strengthening (6).

In the field of material engineering the present research of cement composites is focused on the building materials performance requirements such as a long-term stability under extreme physical and chemical conditions, ecological, energy and economical requirements. The present research is aimed at the development of special cements for application in geothermal wells (7), ternary blended cements based on natural raw materials, geopolymers and alkali-activated binders (8).

Note that the aim of this issue is to present a representative sample of recent research followed at the institute rather than to illustrate comprehensively the research activity of the institute.

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