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Editorial
Sustainable Building Materials and Technologies 2018

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The annual special issue *Sustainable Building Materials and Technologies* seeks to collect a coherent whole of studies aimed at increasing the sustainability in construction industry. It covers several topics oriented on the innovative technologies of key building materials production with lower energy and natural raw material consumption and controlled minimization of the total generation of greenhouse gases, development of new environmentally friendly materials and agents, characterization of the properties of construction materials, and methodologies applied in building of structures as core issues of the sustainable development in the field of construction in integration with environmental, social, and economic factors in changing climate conditions.

In this special issue, the papers are addressed to advances in sustainable strategies of the development of building structures with environmentally friendly building materials with improved properties and innovative integrated solutions to key building materials.

The generation of large amounts of industrial inorganic by-products as well waste originating from renewable resources is becoming a drive to their utilization in cement and concrete material and a contribution to waste disposal. The use of waste materials in production of traditional building materials and the applicability of developed new environmentally friendly admixtures improving cement mixture workability, concrete performance, and ensuring economic feasibility are investigated in some papers. The utilization of waste from coal power plants (circulating fluidized bed combustion desulfurization slag) in mortars and their expansion and strength characteristics are evaluated by Z. Cheng et al. The influence of grinding time of slag and amount of added ground slag and sodium sulphate on the expansion rate and compressive strength of cured mortars is studied. Similarly, Y. Li et al. aim at exploring the performances of concrete blended with ultrafine ground granulated blast-furnace slag in the form of slurry.

K. H. Younis et al. examine the feasibility of nanosilica used for improvement of the performance of concrete containing recycled aggregates derived from processing construction and demolition concrete waste of buildings in terms of microstructure, strength properties, and water absorption of concrete.

H. Liu and coworkers focus on the design of the conductive graphite tailing concrete and optimization of its composition due to key parameters affecting the compressive strength of concrete such as water to cement ratio, sand quantity, graphite tailings content, and carbon fibre content. The electrical characteristics of the graphite tailing concrete with optimal contents of graphite tailings and carbon fibre for electrical resistivity prediction are investigated.

The contribution of H. Liu et al. deals with an experimental study on modification of the asphalt binder using crumb rubber from end-of-life tyres and diatomite. Results reveal that asphalt with the addition of crumb rubber can improve the high temperature susceptibility, viscosity, and elastic recovery ability of binder.

In the paper by F. Wu et al., the influences of incorporating two types of fibre (polypropylene and glass) and different volume fraction on the mechanical properties of peach shell lightweight concrete are investigated.

The paper by Y. Guo et al. reports on the utilization of wheat straw as biomass raw material in the preparation of polycarboxylate superplasticizer. The attention is paid to optimizing the preparation conditions of graft copolymerization of the large cellulose molecules of straw fibre and superplasticizer to improve the performance of the water-reducing agent as well as to reduce its production cost.

J. Zhou et al. study the mechanical behaviour of embedding strength of designed construction material—parallel strand bamboo perpendicular to grain. The feasibility for this material is assessed.

X. Lin et al. use a multifunctional smart composite material prepared by dispersing soft magnetic particles into a Silly Putty matrix for the design of a novel shear thickening magnetorheological damper with rate-sensitive characteristic (speed locking) and semiactive controlling properties for large civil engineering structures. A multiparameter and symmetry model is established for description of the dynamic hysteretic behaviour of this damper.

Another group of authors focus their research on the durability and resistivity of the materials. Z. Guo et al. report on the basalt fibre reinforced concrete in China with an emphasis on alkali resistance of fibres and static mechanical properties of composites such as the strength and toughness. In this paper, six research topics related to alkali resistance and static mechanical properties of three-dimensional, randomly distributed basalt fibre-reinforced concrete are proposed.

W. Zhang et al. pay the attention to the research of the degradation of roller compacted concrete samples cured for 28 days during the freeze-thaw cyclic process in potassium acetate solution. The weight loss, the dynamic elastic modulus, the mechanical properties, and the residual strain of concrete samples are evaluated.

H. Min et al. investigate the sulfuric acid corrosion mechanism for concrete in a soaking environment. Based on the theory of reaction boundary layer, this paper presents a sulfuric acid corrosion model for concrete usable for prediction of the mechanism in practical engineering and providing the foundation for steel corrosion prediction.

B. Cui et al. study the effects of different concentrations of sodium sulphate and immersion time on the strength and the structure of hydration products. The fly ash-based coal mine filling paste test blocks were evaluated in comparison to the referential filling paste.

The paper related to using cement-solidified contaminated soil as road subgrade material is presented by Y. Zhou et al. Carbonation effects on strength and the settlement of this solidified soil are evaluated.

The advanced construction technology is of the interest in the following papers: W. Drozd et al. concentrate on an innovative alternative construction technology applying in low-impact buildings. A comparative study of three type of walls made of locally sourced materials with biomass component in terms of construction time is presented.

The paper by D. Zhang et al. presents a new type of joint for connecting steel beams with a concrete-filled double-skin steel tubular column and the examined failure modes and hysteretic behaviours. A finite element analysis model of the joint was also established and validated by comparing its predictions with experimental results.

In the paper by J. Yue, the seismic responses of a large-space vertical hybrid structure and the mechanical behaviour of the Y-type-steel steel reinforced concrete column are analysed. A local-fine finite element model is proposed, and a large-space vertical hybrid structure is numerical simulated.

The environmental, social, and economic indicators for measuring sustainable construction materials are analysed in the paper by H. Danso. Based on the statistical evaluation of data collected from structured questionnaires including 25 indicators, 12 key indicators are identified.

Conflicts of Interest

Nadezda Stevulova, Kestutis Baltakys, Adriana Estokova, and Tomas Sverak as Guest Editors of the annual special issue *Sustainable Building Materials and Technologies* hereby declare no conflicts of interest.

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