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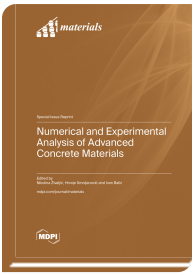
Special Issue Reprint

Numerical and Experimental Analysis of Advanced Concrete Materials



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In modern engineering practice, more different types of concrete structures are used. Current applications in the construction of modern structures, or applications in the strengthening and reinforcement of existing structures, require the analysis of structures of different material properties and shapes exposed to different types of loads such as quasi-static, dynamic, cyclic, impact or seismic. In practice, several experimental tests exist that provide new insights into concrete as a material at the micro, mezzo, and macro levels. These results significantly increase knowledge about the behavior of concrete as a material. Such tests are expensive, but their significance lies in the possibility of implementing material behavior in new numerical models. The development of new numerical models can simulate the behavior of concrete as a building material with improved properties due to a new type of aggregate, some chemical composition, etc. Also numerical models can simulate the behavior of concrete structures whose load capacity can be increased form of fastening. This special issue collected and presented experimental results as well as new numerical simulations of the behavior of concrete as a material and concrete structures. A thorough understanding, which processes affect the reduction of strength and the formation of cracks in concrete, is key to the analysis of existing materials and design of improved innovative materials of concrete and concrete structures.

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