

Special Issue Reprint

Future Civil Engineering

www.mdpi.com/books/reprint/11145

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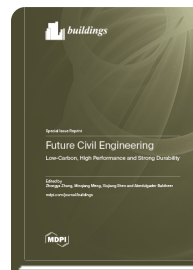
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ISBN 978-3-7258-4485-2 (Hardback)

ISBN 978-3-7258-4486-9 (PDF)



This reprint explores frontier research driving the transition to sustainability in civil engineering. In this reprint, leading experts in the field share their insights, research findings, and visions for the future. Key challenges caused by climate change and resource scarcity were addressed through 11 interdisciplinary studies. From high-precision breakthroughs in thermodynamic, non-destructive testing to the discovery of vibration enhancement mechanisms for UHPC and from high-strength composite material performance optimization models to a 20% accuracy leap in dynamic monitoring algorithms, every technological innovation point leading to the reconstruction of the entire lifecycle effectiveness of infrastructure was analyzed. These results deeply integrated the synergistic evolution of intelligent perception, structural engineering, advanced materials, and ductility systems to form a low-carbon technology system covering the whole cycle of design, construction, operation, and maintenance. This Special Issue provides a practical path to reduce implied carbon emissions and extend the life of infrastructure and strongly promotes the strategic transformation of the civil engineering industry towards an intelligent and green direction.

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