New material &Construction (material)II

座長:毛利聡(土木),金久保利之(建築)

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[1357]STRENGTH DEVELOPMENT OF TERNARY CEMENT BLEND OF PORTLAND CEMENT, BLAST FURNACE SLAG, AND CALCIUM CARBONATE

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Keywords: ternary cement blend、blast furnace slag、precipitated calcium carbonate、aluminate hydrate、dissolution method、XRD/Rietveld

This study assesses the impact of SCMs (BFS, LP, EC) on cementitious materials hydration and strength development for carbon emission reduction. It explores LP and EC synergy with BFS and OPC in a ternary blend. Analyses include XRD/Rietveld, selective dissolution, and compressive strength tests. LP and EC enhance aluminate hydrate production, particularly with BFS, and EC shows superior strength development. The ternary blend of OPC:BFS:EC at 20:40:40 achieves 99% carbon emission reduction, maintaining 70-80% OPC-only strength, highlighting sustainable concrete design potential.

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