UPO UNIVERSITÀ DEL PIEMONTE ORIENTALE

DiSIT
DIPARTIMENTO
DI SCIENZE
E INNOVAZIONE
TECNOLOGICA

SEMINARI RICERCA E FORMAZIONE

Giovedì 19 Novembre 2026
ore 14:00-16:00
AULA 204



Towards Net-Zero Cement and Concrete: CO_2 Mineralization and Carbonation Technologies

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The cement industry is one of the major contributors to global CO_2 emissions. CO_2 utilization and mineralization technologies have the potential to reduce cement-related carbon emissions by more than 60%, making them an important pathway toward achieving net-zero emissions by 2050. This seminar will present recent advances in CO_2 mineralization and carbonation technologies for cement and concrete, with particular emphasis on carbonation mechanisms, reaction kinetics, microstructural evolution, CO_2 uptake, and their influence on material performance. The seminar will also introduce our recently funded Marie Skłodowska-Curie Actions project, Syn4WCO2-Cem. The project integrates CO_2 capture with the high-value utilization of recycled concrete powder to develop novel low-carbon cementitious materials. Particular emphasis is placed on advanced laboratory and synchrotron X-ray techniques, including in situ imaging and diffraction, to directly observe hydration processes, particle dissolution, and the formation and evolution of reaction products in these novel cementitious systems. Overall, the seminar aims to provide new insights for the development of next-generation low-carbon cement and concrete.

Il seminario è promosso dal Prof. Geo Paul

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