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Chemical and geotechnical analysis of the mortar and rammed earth from merinid walls of the Moroccan historical monument Chellah-Rabat for detection of alteration products and the origin of the original materials used.

Siham Belhaj, Imane Jaouda, Hanane Souidi, and Mohammed Aqil

Mohammed v university, Mohammadia engineering school, L3GIE, Rabat, Morocco (siham.ellayl.belhaj@gmail.com)

Rabat, the capital of the Moroccan Kingdom, listed as a UNESCO World Heritage Site in 2012, has several historic monuments testifying its diversity and richness in tangible and intangible heritage, cultural richness, architectural diversity that perpetuates the different dynasties that are succeeded over time on this Kingdom.

The Chellah monument testifies to this diversity by including within its walls a variety of civilizations.

This special monument by its architecture, its history, its situation in the city of Rabat, knows physical and chemical degradation due to its location and the peculiarity of its building materials as well as the techniques used for the construction or for the rehabilitation.

In this work we have tried to decipher these causes and to quantify these degradations by the petrographic, mineralogical, geotechnical and chemical identifications of the products of the alteration, via laboratory analyzes such as the scanning electron microscope equipped with the EDX system, the diffraction X-ray ,fluorescence and particle size analysis. This is to optimize the choice of alternative materials, while taking into account all the multidisciplinary scientific mechanisms and processes necessary for a better protection of the built material heritage that constitutes a collective memory of this country.

