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**SOIL MICROMORPHOLOGY FOR CONSTRUCTION SCIENCE: THE MORTAR  
ARCHAEOLOGY**

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*Micromorphology revealed in depth evaluation of materials particularly soil micromorphology yielded numerous data on processes such as formation, neoformation and transformation of minerals and microstructure in soils, pottery and construction materials. Mortars, one of the first human made materials for construction of Byzantine and the Ottoman worlds were compared in terms of micromorphology and mineralogy. The Byzantines were the first to introduce the Roman mortar/concrete, the Opus Signinum, to the eastern world as was used in prestigious buildings, where the architectural and materials production knowledge was extended to the other parts of the Ottoman world for religious complexes. Mortars of different types and compositions were widely known and used in the ancient world and the lime mortar–putty was widespread throughout the Roman and Byzantine Empires especially for earthquake resistivity. These mortars, besides being suitable for building purposes were also preferred as a water-tight layer on building mortars or to enhance the water-tight aspects of a building mortar. Adding limestone to the mix has been known to enhance the mortar strength and the formation of ettringite minerals in pores as strengtheners. The better freeze–thaw resistance of the mortars prepared with limestone and volcanic aggregates is probably due to an appropriate pore structure and sufficient mechanical strength. The processes ongoing in mortars were evaluated by soil micromorphology and archaeometry which yielded precise knowledge on the additives and new minerals formation in mortars.*