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# Historic mortars and plasters as a tool for age determination

**D. Michalska Nawrocka**

Institute of Geology, Adam Mickiewicz University, Department of Dynamic and Regional Geology

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Recognition of the properties and mineralogical-chemical composition of mortars, besides the properties of the rock material building the given archeological object by itself, may have substantial meaning for monuments preservation. Petrographic investigations allowed to obtain precise macroscopic and microscopic descriptions, and to define mineralogical composition of aggregate and binder. Such an identification enables to reconstruct mortar technology and, in combination with geological studies on the investigated terrain, helps to identify provenience of the applied raw material.

Recognition of mineral composition and technology of mortars and plasters is necessary in the investigations concerning their absolute age determination. This is a method, which becomes a basic tool for the research on correlation of particular walls in cases when attempts of absolute age determination do not give reasonable results. Simple determination of mineral composition and the amount of sand addition is a very useful method, applied in correlation of relative age of a building and successive phases of its development. The enormous advantage of mortar dating in comparison with another materials is the fact, that their age should correspond with the age of construction of a building. Radiocarbon dating of lime mortars is based on setting the present 14C concentration of CO2 by mortar carbonates in the hardening process. The problem appears when there are some unburnt fragments of carbonate rocks or limestone aggregate in the mortar. The presence of aggregate, especially carbonatious one, has an enormous influence on the precision of dating (Folk et al.,1979; Sonninen et al., 2001). This problem can be reduced by application of petrographic studies and appropriate samples preparation.

Mortars and plasters used in ancient buildings provide important information about the building technology of particular historical period. The performed analyses indicate the possibility to give the characteristics of composition and properties of archeological mortars, and to reveal possible admixtures applied in their production process. In the year 2001 control mortars were prepared. They had fixed composition and admixture of organic matter. The comparison of the analysed mortars with contemporary, control samples, makes possible veryficatoin of the applied methods.

References:

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