

AMS 14C dating of artifacts - prospects and challenges

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The radiocarbon dating method, which was developed in the early 1950's, is an essential chronometer for studying human history. An advent of the accelerator mass spectrometry AMS and a substantial downscaling of sample sizes from grams to milligrams of the material opened the doors for dating precious objects of cultural heritage.

The material studied typically is parchment, textiles, paper, and wood. Developments are made in analyzing less common materials such as iron, mortar, binding media, and pigments. Other technical developments lead to an increase in the capacity of existing AMS laboratories. Detection of forgeries can be supported by 14C analysis, which allows detecting material dating to other than declared time. Application of 'bomb peak' 14C allows successfully to see material formed in the last 60 years (post-nuclear test era). Successful applications of bomb peak resulted in an increased interest in applications of the 14C dating of art and cultural heritage objects. However, the conservation applied to Heritage samples is an obstacle that accurate 14C analysis must overcome. Understanding the nature of contamination is an essential part of the process.

This paper will present an overview of the methods applied in 14C dating heritage samples and discuss potential and limitations.

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