

# Identification of Some Adhesives and Wood Pyrolysis Products of Archaeological Origin by Direct Inlet Mass Spectrometry

by Lubomír Prokeš\* and Martin Hložek<sup>2</sup>

<sup>1</sup> *Department of Chemistry, Faculty of Science, Masaryk University,  
Kotlářská 2, 602 00, Brno*

<sup>2</sup> *Institute of Archaeology and Museology, Faculty of Arts, Masaryk University,  
Arna Nováka 1, 602 00, Brno*

**Keywords:** Mass spectrometry; Archaeology; Adhesives; Wood pyrolysis products; Bitumen

DI-MS was successfully used as a screening method for identification of ancient adhesives (birch bark tar, pine tar, bitumen) and wood pyrolysis products (soot). Fragment or molecular mass peaks of some biomarkers, *e.g.* diterpenoids (pine tar), triterpenoids (birch bark tar), or long chain linear aliphatic hydrocarbons and terpenes (bitumen) were of the utmost importance for identification. It was also possible to distinguish between soot of soft- and hardwood origin from the presence of fragment peaks of syringyl moieties, if methoxylated phenols were still present in the sample. Mass peaks of retene were an indicator of high-temperature (above 350°C) thermal treatment of coniferous resin or softwood. Pyrolysis products of resin acids served as indicators of softwood burning if methoxyphenol moieties were absent due to their volatility at high temperatures.