4. Conclusions

1. The method of gas chromatography was successfully optimised for a reliable determination of individual components in colophony and Mexican copal.
2. Of all the studied pigments, verdigris exhibits the most significant effect on the composition of fresh colophony and Mexican copal.
3. The degradative processes caused by artificial ageing of diterpenoids (pimaradiene molecules and abietadiene acids) in colophony and triterpenoids (α- and β-amyrin) in Mexican copal were detected.

4. The problem of spectrum distortion can be solved by the use of ultramicrotome slices. A more convenient approach is, however, to compare the infrared spectra of real and model samples obtained by the reflection technique.
5. The detection limits of infrared spectroscopy for the non-aged model colour layers are 0.3-1 % (w/w) for copper phthalocyanine, 1-3 % (w/w) for Prussian blue and 0.3-1 % (w/w) for indigo. Higher detection limits were found for the artificially aged samples of copper phthalocyanine (3 % w/w) and indigo (3-10 % w/w).
6. MALDI-TOF MS is able to identify indigo and copper phthalocyanine in fresh and artificially aged model colour layers. The detection limits are 0.01 % w/w for indigo and 0.03 % w/w for copper phthalocyanine.
7. MALDI-TOF MS identifies carmine, laccaic acid and dragon red by their molecular ions. In addition, carmine was also identified by the associated proteins.
8. The technique of recording and identification of infrared spectra, that we developed, was successfully tested on medieval as well as modern real samples. In the case of a sample of Czech modern art, we identified the copper phthalocyanine by both infrared spectroscopy and MALDI-TOF MS, thus proving the artwork fake. Using MALDI-TOF MS, carmine was identified in a real sample by the associated proteins.