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Synchrotron Radiation in Molecular Taphonomy and Paleobiology

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Abstract content

The fossilization of organic inclusions –animals, plants and microorganisms- in amber is one of the most complex selective preservation processes from geological deposits. Amber fossils show complete morphologies and structurally almost intact tissues. Amber is a fossilized plant resin with a polymeric microfabric and indeterminate semicrystalline phases associated with the fossilization mechanism. In this contribution, a combined high-resolution microscopy and spectroscopies using Synchrotron-based techniques have been adapted to the ultrastructural and compositional study of amber, as was the morphologies and tissues of terrestrial arthropods trapped within it. To address questions regarding the botanical source of amber and taxonomic identity and biology of ancient organic inclusions, Infrared and X-ray micro-spectroscopies have been applied, such as μ -FTIR, μ -XRF, PIXE and XANES.

Summary

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