
Effects of fire in phytolith assemblages: experimental approach and archaeological applications

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Résumé

The identification of burnt phytoliths in the fossil record has important implications in paleoecological and archaeological research. To date, different methods have been proposed to identify burnt fossil phytoliths but none of them considered the effects of post-depositional processes. Here we present a new method to identify burnt phytoliths using Fourier transform infrared spectroscopy (FTIR). We experimentally burned intact and isolated wheat leaf and inflorescence phytoliths at different temperatures. The preliminary results suggest that burnt phytoliths can be identified using FTIR grinding curves. However, post-depositional processes, in particular rehydration, can affect our ability to detect burnt phytoliths due to changes to their crystal structure. Therefore we can potentially identify burnt phytoliths in the fossil record, but cannot conclusively identify unburnt material.

Mots-Clés: Burning, FTIR spectroscopy, postdepositional processes

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