

Microtomographic exploration of two arthropods from the Montceau-les-Mines Lagerstätte (Carboniferous)

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We report herein the microtomographic study of two arthropods (Insecta & Myriapoda) from the Montceau-les-Mines Lagerstätte (Carboniferous).

The detailed study of the wing of a fossil insect led to the description of a new species of the genus *Blattinopsis*. The use of the μ CT allowed the three-dimensional reconstruction of the specimen's mouthparts. The particularly long maxillary and labial palps, associated with “biting-chewing” type mandibles, come to test the phylogenetic status of Blattinopsidae as a stem-hemiptera on one hand, and question the diet and the ecology of this insect on the other hand. *Blattinopsis* sp. nov. A was probably palynovorous, and probably played a role in the pollination of plants in contemporary coal forests.

The μ CT study of four specimens of the millipede *Amynilyspes fatimae*, together with interpretation drawings, allowed the discovery of new head and sexual structures for this species. These new morphological features enabled the construction of a strong morphological character matrix in order to include this species in the phylogeny of the subclass Pentazonia. *Amynilyspes fatimae* is linked to the order Sphaerotheriida. The three-dimensional reconstruction of the specimens confirmed its terrestrial lifestyle and allowed discussions about its biology and ecology.

Mots-Clés: Montceau-les-Mines Lagerstätte, Carboniferous, Insecta, Myriapoda, CT-Scan