



Keynote presentations abstracts

New tools, new characters: the contribution of MNHN X-ray tomography CT Scan in the study of fossil hexapods

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The Museum national d'Histoire naturelle, Paris, France, recently acquired a high-resolution CT scan, a v|tome|x L240-180 from GE Sensing and Inspection Technologies phoenix|x-ray, it consist of two interchangeable tubes, a X-Ray 240kV/320W microfocus directional tube, 1µm detail detectability, and a X-Ray 180kV/15W nanofocus transmission tube, 0.5µm detail detectability, as well as a movable detector formed by a 2024² pixels (200 microns pixel pitch) matrix, as a MNHN UMS 2700 AST-RX platform equipment, with unique performance capabilities and applications for the natural science field. We present some recent results of X-ray tomography analyses of fossil insects from the MNHN collections performed on this equipment, which represent technical and scientific challenges by the great variety of geological and taphonomic situations, viz. insect inclusions in Mesozoic and Cenozoic amber, to preserved in 3D epigenized 'mummies' from the Cretaceous Crato formation, or Carboniferous nodules from Montceau-les-Mines, etc. These results are compared to those obtained with more powerful tools such as synchrotron beamlines (ESRF, Soleil, Diamond, etc.). The compromise between accessibility, technical performances of AST-RX equipment and acquisition results, is a major breakthrough when searching new characters, necessary for robust phylogenetic reconstructions, dating, and palaeobiological studies including extant comparisons. It will allow important methodological advances in the field (non-invasive exploratory studies, screening of amber in its matrix, studies of syninclusions, etc.). Some further analyses will always need access to synchrotron light ('operational' definition equal to or less than one micron, difficult to obtain depending on the material with CT scan). CT scan analysis are

a prerequisite for optimising the access to the very expensive synchrotron light beamlines, to get better performances for the paleoentomologists community.

