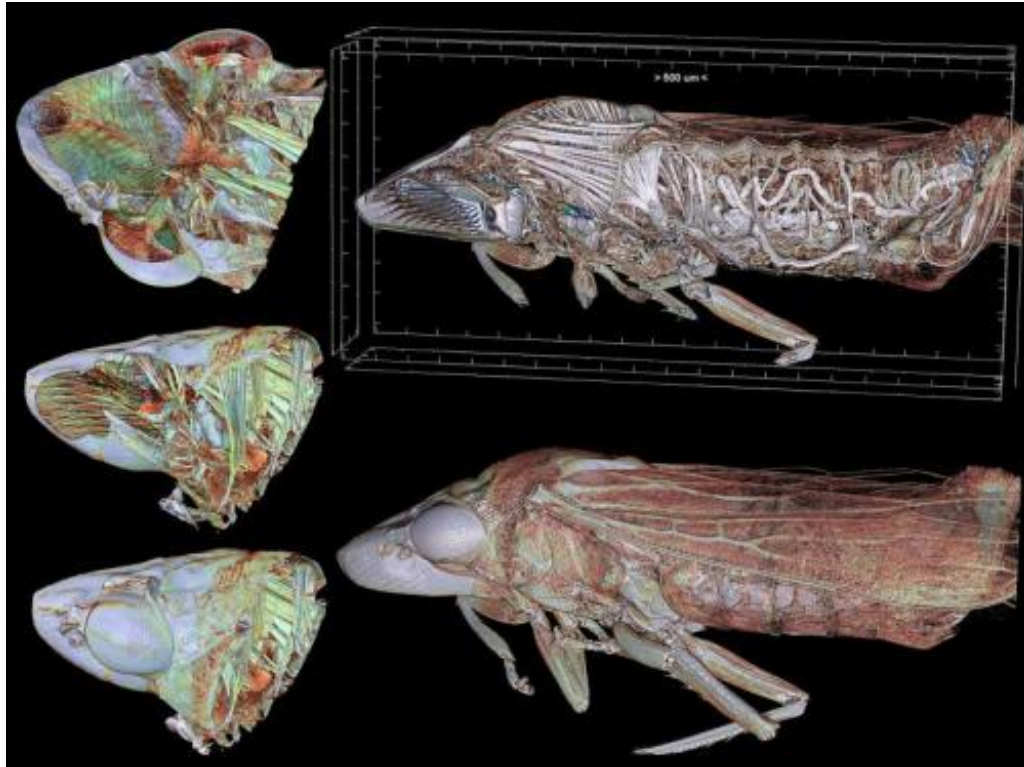


Spanish scientist obtains international award for 3-D video of a journey to the interior of a cicada

phys.org/news/2014-09-spanish-scientist-international-award-d.html



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Homalodisca vitripennis, commonly known as glassy-winged sharpshooter, obtained through microtomography. Credit: UGRdivulga

A researcher from the University of Granada has obtained an award at the 'Bruker micro-CT user meeting,' an international conference that took place in Ostend, Belgium, for a video which recreates a journey through the interior of an insect (*Homalodisca vitripennis*, commonly known as 'glassy-winged sharpshooter'). His video, produced with an innovative 3-D technology known as microtomography, has obtained this year's best scientific video award.

This species is of particular interest because it attacks vineyards. This plague results in severe economic damage for farmers all over the world, since this insect acts as vector for the spread among these plants of diseases caused by microorganisms.

The award-winning video has been shot by Javier Alba-Tercedor, a zoology professor at the University of Granada, using a SkyScan 1172 microtomographer, which his department purchased in 2007 thanks to an infrastructure subsidy provided by the European Fund for Regional Development.

Professor Alba-Tercedor has since mastered the different techniques for the preparation of samples, the use of the instrument itself as well as its software. This has led to most satisfactory results, which have earned him on four different occasions awards for best image and video in different editions (2010, 2012, 2013 and 2014) of the "Bruker-Micro CT Meeting".

Microtomography is a non-invasive technique, well known within the scientific community and widely used in medicine. In the case of micro-CT, it provides high resolution images. Since samples need not be altered in any manner whatsoever, it also allows for the study of valuable samples without producing

any damage.

Thanks to this innovative technique, Prof. Alba-Tercedor has managed to record over little more than 30 seconds (the maximum length stipulated for the contest), a which recreates the different parts of the body of this sharpshooter with a resolution of 1,45 micras per pixel, which proves the great potential of this technique.

This video is not supported by your browser at this time.

Advantages of microtomography

According to Prof. Alba-Tercedor, microtomography represents an improvement in contrast with similar techniques, such as scanning electron microscopy. "Once they have been scanned, samples can be examined in the computer from any angle. Besides, you can also execute virtual cuts—similar to those applied in more traditional cases with microtomes—which do not result in the destruction of the insect.

Prof. Alba-Tercedor adds that this technique has "numerous interesting applications" which can be employed "in a large variety of scientific disciplines", such as medicine, anthropology or archaeology, besides zoology itself.

In his own words, Prof. Alba-Tercedor is a "zoologist, specializing in environmentalism and river pollution who has found in a new exciting area for further multidisciplinary research, which in turn has led to collaborations with research groups all over the world." This current research is part of a larger collaboration project with Dr. Wayne Hunter, from the United States Agriculture Department (USDA) at Fort Pierce, Florida.

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