Micro-CT of *Pseudocneorhinus bifasciatus* by projection x-ray micosopy

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The projection X-ray microscope utilized a very small X-ray source from a thin (0.1-3 μm) target metal film that is excited by the focused electron beam of a scanning electron microscope (SEM). If an object is placed just below the target metal film, the diverging X-rays enlarge the shadow of the object. Because no X-ray optics such as zone-plate is used, focal depth is infinite in principle. Taking this advantage, we have applied projection X-ray microscope for three-dimensional (3-D) structure analysis by means of cone-beam computed tomography (CT). The projection images of a small arthropod (*Pseudocneorhinus bifasciatus*, 5 mm in length), was recorded in every 3 degree for whole direction (360 degree) with a stepping motor controlled sample rotator. The 3-D image was reconstructed from corn-beam projections using filtered back-projection algorithm.

Three dimensional reconstructed image was calculated as 256 × 256 × 256 boxel data. In Fig.A-C, outermost surface of the reconstructed image is shown using three-dimensional visualization software (AVS) and it reproduces the original object precisely. Some part of slice images vertical to the rotation axes and two directions along the rotation axes were shown in Fig. D, Fig.E, and Fig. F, respectively. The reconstructed 3-D image shows detailed internal structures of an opaque object.