

X-ray CT and DEI images of the biological soft-tissue using synchrotron X-rays

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Biological soft-tissue embedded in marine invertebrates are imaged using 20, 30 and 40 keV synchrotron X-rays utilizing X-ray CT and diffraction-enhanced imaging technique. The choice of energy is chosen based on the quality of the image. Visualized the embedded features at different regions within the shell. The choice of optimum energy allowed us clear visibility of the soft-tissue internal structure with void space. The sensitivity of X-ray imaging to soft-tissues must be improved with monochromacy, for better contrast, in particular, utilizing the new X-ray modalities, such as, diffraction-enhanced imaging. Recently, refraction properties of X-rays turn to be more attractive advantages for imaging over the absorption properties. Refraction is orders of magnitude more sensitive, particularly for biological or low materials. Diffraction-enhanced imaging (DEI) technique exploits these refraction for differentiating the biological soft-tissue with high collimated synchrotron X-rays. Compared the images obtained using X-ray CT and DEI.

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