

問 1 .

1. An energy dispersion type X-ray detection apparatus that analyzes elements by emitting an electron beam, an X-ray, or the like on a sample and detecting a characteristic X-ray generated from a surface of the sample, the energy dispersion type X-ray detection apparatus comprising:

an device holder that stores a semiconductor X-ray detecting device and is provided with a female screw having a cylindrical shape; and

a finger body that stores a substrate having an initial stage FET for amplifying a signal from the semiconductor X-ray detecting device, includes a cooling mechanism, and is provided with a male screw,

wherein the energy dispersion type X-ray detection apparatus is configured such that the device holder and the finger body are tightened by the female screw and the male screw to fix the semiconductor X-ray detecting device.

2. The energy dispersion type X-ray detection apparatus according to Claim 1, wherein the device holder that stores the semiconductor X-ray detecting device is made of a metal material with a high coefficient of thermal expansion, whereas the finger body that stores the substrate having the initial stage FET is made of a metal material with a coefficient of thermal expansion that is smaller than the coefficient of thermal expansion of the device holder.

3 The energy dispersion type X-ray detection apparatus according to Claim 1, wherein the device holder is provided with an opening portion having a slit shape such that a high voltage wiring for supplying a voltage to an electrode of the semiconductor X-ray detecting device is capable of passing through the device holder.

問 2 .

As a conventional image compression system, the JPEG system standardized by the ISO is representative. This system uses discrete cosine transform, in a case where a relatively large number of encoded bits is allocated, it is known to provide a favorable encoded image and a favorable decoded image. However, if the number of encoded bits is reduced to a certain extent or more, block distortion becomes remarkable and the deterioration is subjectively conspicuous.

On the other hand, research on a system in which an image is divided into a plurality of bands using a filter, which is called a filter bank, obtained by combining a high pass filter and a low pass filter and encoded for each of the bands is recently becoming popular. In particular, a wavelet transform encoding is regarded as a new technology replaced to DCT because of not having disadvantage in which the block distortion becomes remarkable by high compression as in DCT.

For example, a JPEG2000 that has completed International standardization in January 2001 employs a system in which a high efficient entropy encoding is combined with this wavelet transform encoding, and obtains a large improvement of a coding efficiency than that of the JPEG.

問 3 .

To be specific, the electronic paper device 26 is a conventional known self-writing type device capable of displaying predetermined information as an image on an image display unit in a state in which a voltage is applied, and holding the image in a no power supply condition. In a state in which no voltage is applied to each pixel electrode configuring a matrix in the image display unit through a driver by the microcomputer 23, negatively (-) charged white particles collect on a back surface side of the image display unit, whereas positively (+) charged black particles remain on a surface side thereof. When the image display unit is viewed from the surface side, the image display unit is in a state being colored in black. Subsequently, when the driver operates on the basis of electronic data output from the microcomputer 23, inverts a polarity of the pixel electrode of a main portion of the matrix in accordance with information to be displayed as an image, a positional relationship between the white particles and the black particles are appropriately exchanged, information by contrast of the white particles and black particles is displayed as an image on the image display unit. Additionally, the electronic paper device 26 can hold an image displaying state as it is even in the no power supply condition in which no voltage is applied to each pixel electrode configuring the matrix in the image display unit through the driver.