受験番号：26IPE010

門 1

Claim 1

An energy-dispersive X-ray detection device for irradiating a sample with an electron beam, X-rays, etc. to detect and perform elemental analysis on characteristic X-rays emitted from the surface of the sample, wherein said device is characterized by comprising an element holder which houses a semiconductor X-ray detection element and is provided with a cylindrical internal screw, and a finger body which houses a substrate having a first-stage FET for amplifying signals from the semiconductor X-ray detection element, has a cooling mechanism, and is provided with an external screw,

the element holder and the finger body being fastened together by means of the internal screw and the external screw, thereby securing the semiconductor X-ray detection element.

Claim 2

The energy-dispersive X-ray detection device according to claim 1, characterized in that the element holder for retaining the semiconductor X-ray detection element is made from metal stock having a large thermal expansion coefficient, whereas the finger body retaining the substrate that has the first-stage FET is made from metal stock having a small thermal expansion coefficient relative to the element holder.

Claim 3

The energy-dispersive X-ray detection device according to claim 1, characterized in that the element holder is provided with a slit opening so that high-voltage wiring for supplying voltage to an electrode of the semiconductor X-ray detection element can be passed through the element holder.

門 2

One conventional and representative image compression format is the JPEG format standardized by the ISO. This format uses discrete cosine transforms (DFT), and is known to yield excellent encoded as well as decoded images when a relatively large number of encoded bits are allocated. However, reducing the number of encoded bits to a certain extent or more results in pronounced block deformation, whereby deterioration in image quality becomes subjectively apparent.

Recently, however, there has been a great deal of development of formats in which images are divided into a plurality of bands by means of a combination of filters

including both high-pass and low-pass filters, known as a filter bank, and then each of the bands is encoded. From among these developments, wavelet-transform encoding is highly regarded as a new technique to be used in place of DCT because wavelet-transform encoding does not suffer from the drawback of pronounced block deformation at high compression rates, as DCT does.

JPEG 2000, for example, which was fully internationally standardized as of January 2001, employs a format combining the abovementioned wavelet transform with highly efficient entropy encoding, and is a vast improvement over JPEG in terms of encoding efficiency.

門 3

More specifically, the electronic paper device 26 is a conventionally known self-writing electronic paper device that is capable of displaying prescribed information as an image on a display unit when in a voltage-applied state and maintaining this display when in a non-powered state. By means of the microcomputer 23, when no voltage is being applied via the driver to the pixel electrodes constituting the matrix on the display unit, negatively charged white particles remain on the back surface side of the image display unit, while positively charged black particles remain on the front surface side of the image display unit, such that the image display unit appears to be colored black when viewed from the front surface side. The driver operates on the basis of electronic data output from the microcomputer 23, and when the polarity of the requisite pixel electrodes of the matrix is reversed in accordance with the information to be displayed as an image, the positional relationships between the white particles and black particles are switched, as appropriate, such that information represented by the contrast between the white particles and black particles is displayed as an image on the display unit. Moreover, the electronic paper device 26 is capable of maintaining, on the image display unit via the driver, the image display state as is even when in a non-powered state in which no voltage is applied to the pixel electrodes constituting the matrix.