問１.
[Claim 1]

An energy-dispersive x-ray detector that irradiates a test piece with an electron beam, an x ray, and another ray, to detect a characteristic x ray generated from a surface of the test piece for ultimate analysis, comprising: an element holder accommodating a semiconductor x-ray detection element and provided with a cylindrical internal thread; and a finger body accommodating a substrate that has an initial stage field-effect transistor (FET) for amplifying a signal from the semiconductor x-ray detection element, including a cooling system, and provided with an external thread,

wherein the energy-dispersive x-ray detector is configured such that the element holder and the finger body are fastened by the internal thread and the external thread to fix the semiconductor x-ray detection element.

[Claim 2]

The energy-dispersive x-ray detector according to claim 1, wherein the element holder is made of a metal material having a high thermal expansion coefficient, and the finger body is made of a metal material having a thermal expansion coefficient lower than the thermal expansion coefficient of the element holder.

[Claim 3]

The energy-dispersive x-ray detector according to claim 1, wherein the element holder is provided with a slit-like opening for allowing a high-voltage conductor to pass through the element holder, the high-voltage conductor being configured to supply a voltage to an electrode of the semiconductor x-ray detection element.

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One of the conventional, typical methods for image compression is the JPEG method, which is standardized by the ISO. This method uses discrete cosine transform (DCT), and if a relatively large number of coded bits are allocated, the method has been known to provide favorable coded and decoded images. However, if the number of coded bits are decreased to

a certain degree or more, remarkable blocking artifacts are generated, causing significant degradation from a subjective viewpoint.

On the other hand, in recent years, active studies have been conducted on methods of dividing an image into a plurality of bands using a filter, called a filter bank, configured with a combination of a high-pass filter and a low-pass filter, and coding the image on a band-by-band basis. Among them, wavelet transformation coding is regarded as a promising technology serving as a substitute for DCT. This is because wavelet transformation coding has no defects such as remarkable blocking artifacts under high compression as in DCT.

For example, JPEG 2000, which has been internationally standardized in January 2001, adopts a method configured with a combination of the wavelet transformation above and efficient entropy coding, and highly improves coding efficiency in comparison with JPEG.

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Specifically, the electronic paper device 26 is of a conventionally well-known, self-writing type that can display predetermined information as an image on an image display unit under a voltage applied state, and retain it under a de-energized state, as described below. In a state in which no voltage is applied by the microprocessor 23 via a driver to each pixel electrode that configures a matrix in the image display unit, white particles negatively (–) charged are accumulated on a back surface side of the image display unit, whereas black particles positively (+) charged remain on a front surface side of the image display unit. Accordingly, the image display unit are brought into a black-colored state when seen from its front surface side. Subsequently, when the driver operates based on electronic data output by the microprocessor 23, and reverses polarity of pixel electrodes in a required portion of the matrix in accordance with the information to be displayed as an image, positional relations between the black and white particles are interchanged as appropriate, so that the information having a contrast between the black and white particles is displayed as an image on the image display unit. In addition, the electronic paper device 26 can retain the image display state as it is, even under the de-energized state in which no voltage is applied via the driver to each pixel electrode that configures the matrix in the image display unit.