- a filter for the detector comprising a high-pass or a band-pass filter adapted to ~~attenuate~~ eliminate the excitation radiation and to transmit to the detector those photons which have a wavelength included in the range of fluorescent radiation wavelengths emitted by the marker;

~~the light emitted by the illuminating device being filtered by~~ a low–pass filter positioned in front of the illuminating device having a cut–off wavelength below the emission range of the fluorescent marker, said low–pass filter nonetheless being able to exhibit attenuation peaking or fluctuations at wavelengths above the emission range of the fluorescent marker.

According to embodiments of the invention, the filter for the detector further comprises a low-pass filter combined with the high-pass or band-pass filter such that, in a range of wavelengths extending from an upper cut–off wavelength of the detector filter that is below the wavelength on and after which attenuation peaking or fluctuations of the low–pass filter of the illuminating device are observed, the product of the attenuation of the detector filter and of the attenuation of the low–pass filter of the illuminating device leads to an attenuation by a factor of at least 10^6.

Herein the term « filter » may encompass an elementary filter or a combination of filters.

As explained in detail below, the effect of this filtering of the detector is to eliminate bias and background noise due to peaking of the low–pass filter of the illuminating device which, due to the intensity of operating room lighting, allows parasitic light to pass that is sufficiently intense to mask some of the fluorescence photons derived from deep regions and which are therefore few in number.

By means of this filtering, the detector becomes more sensitive to the fluorescence signal emitted from the deep layers and produces more contrasted images.

Also, since this filtering is applied to the detector which has a small surface area, it has no resultant effect on the cost of the system

According to one embodiment of the invention, the wavelength of excitation radiation is between 630 and 810 nm.

Preferably, the bandwidth in which the detector filter transmits fluorescent radiation is between 50 and 70 nm.

According to one particularly advantageous embodiment of the invention, the range of wavelengths in which the product of the attenuation of the detector filter and the attenuation of the low–pass filter of the illuminating device leads to an attenuation by a factor of at least 10^6, extends at least up to the limit detection wavelength of the detector

Therefore the range of wavelengths in which the product of detector filter attenuation and low–pass filter attenuation by the illuminating device leads to an attenuation by a factor of at least 10^6 preferably extends at least up to 1000 nm, and even further preferably up to 1150 nm.

In addition, in the range of wavelengths transmitted by the detector filter, the low–pass filter of the illuminating device exhibits attenuation by a factor of at least 10^6.

CLAIMS

1. A fluorescence imaging system for an operating room comprising an operating room illuminating device capable of emitting white light, and a fluorescence imaging device,

the fluorescence imaging device comprising:

- a light source capable of emitting excitation radiation to excite a fluorescent marker in a range of emission wavelengths of between 600 and 900 nm;
- a detector adapted to detect the fluorescent radiation emitted by the marker under the effect of excitation by the light source;
- a filter for the detector comprising a high pass or a band-pass filter adapted to ~~attenuate~~ eliminate the excitation radiation and to transmit to the detector those photons having a wavelength included in the range of wavelengths of fluorescent radiation emitted by the marker,
- ~~the light emitted by the illuminating device being filtered by~~ a low–pass filter positioned in front of the illuminating device having a cut–off wavelength below the emission range of the fluorescent marker, the low–pass filter nonetheless being able to exhibit attenuation peaking or fluctuations at wavelengths above the emission range of the fluorescent marker,

the system being **characterized** in that the filter for the detector further comprises a low-pass filter combined with the high-pass or band-pass filter such that, in a range of wavelengths extending from an upper cut–off wavelength below the wavelength on and after which attenuation peaking or fluctuations of the low–pass filter of the illuminating device are observed, the product of attenuation by the filter of the detector and of attenuation by the low–pass filter of the illuminating device leads to an attenuation by a factor of at least 10^6.

2. The system according to claim 1, characterized in that the wavelength of excitation radiation is between 630 and 810 nm.

3. The system according to one of claims 1 or 2, characterized in that the bandwidth in which the filter of the detector transmits fluorescent radiation is between 50 and 70 nm.

4. The system according to one of claims 1 to 3 characterized in that the range of wavelengths, in which the product of attenuation by the detector filter and of attenuation by the low–pass filter of the illuminating device leads to attenuation by a factor of at least 10^6, extends at least as far as the limit detection wavelength of the detector.