Claims

1. A multi-wavelength endoscopic system for imaging an observation site labeled with a plurality of fluorescent materials having different colors, comprising:

an imaging unit configured to acquire image data by polarizing incident light reflected from the observation site in a first direction and a second direction perpendicular to the first direction, dividing a spectrum region of the incident light polarized in the first direction and the second direction into a plurality of spectrum channels and measuring an intensity of light for each of the spectrum channels; and

a computing unit configured to store a single fluorescence spectrum extracted from sample image data obtained by single-treating the observation site with each of the fluorescent materials and configured to separate and output the image data obtained in the imaging unit using the single fluorescence spectrum so that each of the fluorescent materials is displayed separately,

wherein the computing unit is configured to store an untreated fluorescence spectrum extracted from untreated image data obtained by imaging the observation site not labeled with the fluorescent materials, and

wherein the computing unit is configured to perform a correction to remove an auto-fluorescence component contained in the image data obtained in the imaging unit using the untreated fluorescence spectrum.

2. The system of claim 1, wherein the imaging unit includes:

a beam splitter configured to polarize the incident light in the first direction and the second direction perpendicular to the first direction;

a first area filter positioned in a path of a light beam split in the first direction and configured to pass a light beam falling within a predetermined spectral range;

a second area filter positioned in a path of a light beam split in the second direction

and configured to pass a light beam falling within a predetermined spectral range;

a first area camera configured to measure an intensity of the light beam passing through the first area filter; and

a second area camera configured to measure an intensity of the light beam passing through the second area filter.

3. A multi-wavelength endoscopic system for imaging an observation site labeled with a plurality of fluorescent materials having different colors, comprising:

a beam splitter configured to polarize incident light reflected from the observation site in a first direction and a second direction perpendicular to the first direction;

a first area filter positioned in a path of a light beam split in the first direction and configured to pass a light beam falling within a predetermined spectral range;

a second area filter positioned in a path of a light beam split in the second direction and configured to pass a light beam falling within a predetermined spectral range;

a first area camera configured to measure an intensity of the light beam passing through the first area filter;

a second area camera configured to measure an intensity of the light beam passing through the second area filter; and

a computing unit configured to separate and output the image data obtained using the intensity of the light beam passing through the first area filter and the intensity of the light beam passing through the second area filter so that each of the fluorescent materials is displayed separately,

wherein the computing unit is configured to store an untreated fluorescence spectrum extracted from untreated image data obtained by imaging the observation site not labeled with the fluorescent materials, and

wherein the computing unit is configured to perform a correction to remove an auto-fluorescence component contained in the image data using the untreated fluorescence

spectrum.

4. The system of claim 3, wherein the computing unit is configured to store a single fluorescence spectrum extracted from sample image data obtained by single-treating the observation site with each of the fluorescent materials and is configured to separate the image data using the single fluorescence spectrum so that each of the fluorescent materials is displayed separately.

5. An image processing method for processing an image using a multi-wavelength endoscopic system having an imaging unit and a computing unit, comprising:

irradiating light on an observation site labeled with a plurality of fluorescent materials having different colors using the imaging unit;

acquiring image data by receiving a light reflected from the observation site_using the imaging unit;

separating the image data so that only one of the fluorescent materials is displayed using the computing unit;

outputting the separated image data according to a wavelength band using the computing unit;

extracting an untreated fluorescence spectrum from untreated image data obtained by imaging the observation site not labeled with the fluorescent materials, and performing a correction to remove an auto-fluorescence component contained in the image data using the untreated fluorescence spectrum using the computing unit.

6. The method of claim 5, wherein said separating the image data so that only one of the fluorescent materials is displayed using the computing unit further comprises:

extracting a single fluorescence spectrum from sample image data obtained by single-treating the observation site with each of the fluorescent materials.

7. The method of claim 6, wherein said separating the image data so that only one of the fluorescent materials is displayed using the computing unit further comprises:

the image data is separated using the single fluorescence spectrum so that each of the fluorescent materials is displayed separately.