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Kopriva

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(54) **METHOD FOR REAL TIME TUMOUR VISUALISATION AND DEMARCATION BY MEANS OF PHOTODYNAMIC DIAGNOSIS**

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(57) **ABSTRACT**

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Proposed invention is related to the field of photodynamic therapy and photodiagnosis. Specifically, a new algorithm is presented for visualization and spatial demarcation of various types of tumors and unhealthy tissue through unsupervised segmentation of the fluorescent multispectral image. Image is acquired through recording of the emission of the tissue illuminated by the light that induces fluorescence in the tumor. For this purpose tissue is treated by photo sensitizer. Algorithm for real time visualization and spatial demarcation of the tumor by means of the analysis of fluorescent image consists of the recording of the fluorescent image (1) that represents linear combination of the unknown classes S by multispectral camera, transformation of the fluorescent multispectral image into new multispectral image (2) applying nonlinear dimensionality expansion, linear transformation of the multispectral image (2) with extended dimensionality, independent component analysis of the innovation representations of the multispectral image (3) that is result of the transformation of the fluorescent image (1) and multispectral image (2), extraction of the tumor map or class of interest in accordance with the chosen criterion and visualization of tumor on monitor.

(65) **Prior Publication Data**

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(52) **U.S. Cl.** **600/476**

(58) **Field of Classification Search** **600/160,**
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See application file for complete search history.

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9 Claims, 12 Drawing Sheets

