

HYPERSPECTRAL MICROSCOPY USING A PHASE MASK AND SPECTRAL FILTER ARRAY

Tech ID: 33125 / UC Case 2023-120-0

PATENT STATUS

Patent Pending

BRIEF DESCRIPTION

Hyperspectral imaging, the practice of capturing detailed spectral (color) information from the output of an optical instrument such as a microscope or telescope, is useful in biological and astronomical research and in manufacturing. In addition to being bulky and expensive, existing hyperspectral imagers typically require scanning across a specimen, limiting temporal resolution and preventing dynamic objects from being effectively imaged. Snapshot methods which eliminate scanning are limited by a tradeoff between spatial and spectral resolution.

In order to address these problems, researchers at UC Berkeley have developed a hyperspectral imager which can be attached to the output of any benchtop microscope. The imager is compact (about 6-inches), and can achieve a higher spatial resolution than traditional snapshot imagers. Additionally, this imager needs only one exposure to collect measurements for an arbitrary number of spectral filters, giving it unprecedented spectral resolution.

SUGGESTED USES

Hyperspectral imaging, for example in biological and medical contexts, where high temporal, spatial, and spectral resolution are simultaneously desired.

ADVANTAGES

This imager, like traditional snapshot imagers, allows for dynamic systems to be studied by eliminating the need to scan across a specimen. In addition to being smaller and cheaper than existing devices, however, this imager can simultaneously achieve unprecedented spatial and spectral resolution.

RELATED MATERIALS

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INVENTORS

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OTHER INFORMATION

KEYWORDS

Hyperspectral imaging, fluorescence

imaging, microscopy

CATEGORIZED AS

» **Imaging**

» Medical

» Molecular

» **Medical**

» Diagnostics

» Imaging

» Research Tools

» **Research Tools**

» Other

» **Sensors & Instrumentation**

» Medical

RELATED CASES

2023-120-0

ADDITIONAL TECHNOLOGIES BY THESE INVENTORS

- Compressive Plenoptic Imaging
- Optical Phase Retrieval Systems Using Color-Multiplexed Illumination
- Partially Coherent Phase Recovery By Kalman Filtering



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