



## Microscopic Color Imaging And Calibration

Tech ID: 27520 / UC Case 2016-739-0

### SUMMARY

UCLA researchers in the Department of Electrical Engineering have developed a color calibration method for lens-free and mobile-phone microscopy images allowing for high resolution and accurate color reproduction.

### BACKGROUND

Lens-free holographic microscopy can achieve wide-field imaging of samples in a cost-effective and portable setup, making it a promising technique for point-of-care and telepathology applications. However, due to relatively narrow-band sources used in holographic microscopy, conventional colorization methods that use images reconstructed at discrete wavelengths, corresponding to, red (R), green (G) and blue (B) channels, yield color artifacts and are not truly colorimetric (e.g. non-linear color matching functions). A technology that bridges the benefits of holographic microscopy with true color representation (as seen in light microscopy) would revolutionize large field of view imaging for a variety of applications.

### INNOVATION

UCLA researchers led by Prof. Aydogan Ozcan have developed a new method to generate high resolution color correct images for lens-free and mobile-phone holographic microscopy imaging. This method combines the wide field of view and high resolution advantages of lens-free holographic microscopy with accurate color reproduction, generating images that match the chromatic perception of human vision. The technology merges pixel super-resolution and the color de-multiplexing process to significantly suppress the artifacts in wavelength multiplexed holographic color imaging.

### ADVANTAGES

- ▶ Only methods that allows for true color imaging in for lens-free and mobile-phone holographic imaging
- ▶ Might present a promising solution for telepathology applications in resource limited environments, where digital whole-slide scanners are not available
- ▶ Low cost and portable

### PATENT STATUS

Country	Type	Number	Dated	Case
United States Of America	Issued Patent	10,838,192	11/17/2020	2016-739

### RELATED MATERIALS

- ▶ [Color calibration and fusion of lens-free and mobile-phone microscopy images for high-resolution and accurate color reproduction. Zhang Y, Wu Y, Zhang Y, Ozcan A. Sci Reports. June 2016.](#)

### ADDITIONAL TECHNOLOGIES BY THESE INVENTORS

- ▶ [Automated Semen Analysis Using Holographic Imaging](#)
- ▶ [Extended Depth-Of-Field In Holographic Image Reconstruction Using Deep Learning-Based Auto-Focusing And Phase-Recovery](#)
- ▶ [Detection and Spatial Mapping of Mercury Contamination in Water Samples Using a Smart-Phone](#)

### CONTACT

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### INVENTORS

- ▶ Ozcan, Aydogan

### OTHER INFORMATION

#### KEYWORDS

Holographic imaging, color correction, lens free imaging, lens free, wide field of view imaging, imaging, pathology, on-chip microscopy, on-chip imaging

#### CATEGORIZED AS

- ▶ **Biotechnology**
  - ▶ Health
- ▶ **Imaging**
  - ▶ Medical
  - ▶ Other
- ▶ **Medical**
  - ▶ Diagnostics
  - ▶ Imaging
  - ▶ Other
  - ▶ Screening
- ▶ **Sensors & Instrumentation**
  - ▶ Medical
  - ▶ Scientific/Research

#### RELATED CASES

2016-739-0

- ▶ [Computational Cytometer Based On Magnetically-Modulated Coherent Imaging And Deep Learning](#)
- ▶ [Lensfree Tomographic Imaging](#)
- ▶ [Single Molecule Imaging and Sizing of DNA on a Cell Phone](#)
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