

Improvements on the Wavelength Scanning Digital Interference Holography

Researchers at the University of South Florida have developed a method to improve the wavelength scanning digital interference holography.

This process improves the approach to calculate images of tomographic microscopy of biomedical tissues and other materials. These imaging techniques have become a subject of increasing interest.

The tomographic imaging system for wavelength-scanning digital interference holography consists of three sub-systems. A variable wavelength source to provide the necessary range of wavelengths of light with sufficient coherence length for holographic imaging. Secondly, a holographic interferometer and optical system, where the holographic interference pattern is formed for image acquisition by the camera. Finally, numerical processing and image rendering performed by a computer system.

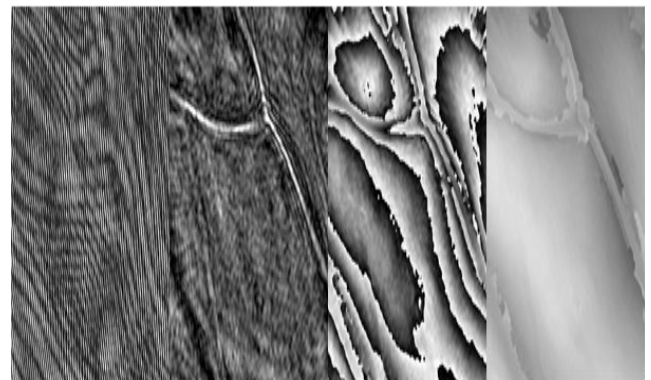
This technique allows non-invasive imaging of tissues such as in retina, skin and gastrointestinal epithelial tissues, with speed and enhanced capabilities.

Diagnostic imaging systems, which enable clinicians to visualize the anatomic structure and evaluate the functional performance of the body's internal organs and tissues, are indispensable in the practice of modern medicine.

ADVANTAGES:

- Improves calculated images
- Lower cost of instrumentation
- More flexible scanning range
- Improves the signal-to-noise ratio

Improved Medical Imaging System



Holography of a layer of onion cells. Images of a) hologram, b) amplitude, c) wrapped phase, and d) unwrapped phase in the upper row are a 100 x 100 mm.

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