SCIENCE FOR THE BENEFIT OF HUMANITY

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An Inexpensive Portable Holographic Microscope

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Technology Summary

Scientists use digital holographic microscopy for the collection of three-dimensional information about a sample or object of interest. Digital holography is typically expensive, with high costs driven by objective lenses and the use of specialized digital imaging devices. As a result, holographic microscopy, like conventional microscopy, is limited to cumbersome and costly devices that cannot be easily used in remote locations or developing countries.

Researchers at The Rockefeller University have developed a holography device that can be attached to any digital camera converting the camera into a holographic microscope. The device obviates the need for expensive objective lenses or digital image sensors by exploiting economical and widely available commercial technology while permitting holographic microscopy with high lateral resolution. In addition, this device can be battery-operated making it portable and efficient for use in the field. Overall, this innovation is a promising tool for cost effective, mobile, high resolution microscopy.

Area of Application

- Biological microscopy
- Fluid dynamics and particle tracking
- Environmental screening device
- Medical diagnostics.

Advantages

- High resolution 3D microscopy.
- Extremely versatile and inexpensive attachments for any digital camera, including those are part of a cellular phone.
- Compact and battery powered to facilitate field research.

Stage of Development

- Functional prototype developed

Lead Inventor

- Dr. Stanislas Leibler

Patent Information

- US Patent 8,049,814
- US Patent 8,553,143