Low-Cost, Compact Chromatic Confocal Microscope

Title: Low-Cost, Compact Chromatic Confocal Microscope

Invention: Researchers at the University of Arizona have designed a high light efficiency, high resolution confocal microscope that has no moving parts. The new design is high-speed, has axial scanning, is compact, and low-cost.

Background: Current state-of-the-art scanning confocal microscopes use axial and lateral scanning techniques, such as DMDs for lateral scanning and a tunable light source and chromatic objective lens for axial scanning. These methods are faster than prior efforts, but are expensive and have low light efficiency. MEMS pinhole arrays have also been used for snapshot 3D imaging, but the lateral resolution is low and also suffers low light efficiency. Light source arrays have improved the light efficiency, but do not adequately address the axial scanning.

Applications:

- Biomedical imaging
- Optical metrology
- Inspection

Advantages:

- Low-cost
- Requires no moving parts
- Compact
- Inexpensive
- Decreases scanning time

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