Docket #: S16-374

Versatile, Reliable, Modular Upgrade for Increasing Imaging Field of View

Stage of research
Researchers designed electro-optical gratings for fluorescence microscopy - a drop in to existing systems with no new lenses. Researchers demonstrate a 9x improvement on FOV using Olympus 10x/0.6NA WI immersion objective at 3.3 Hz.

Applications

- One and two-photon raster scanning image acquisition systems (including confocal systems)
- Brain and neural scanning /optical stimulation of neurons
- Vision systems for virtual reality, autonomous vehicle navigation, and panoramic image capture for cell-phone cameras.

Advantages

- Optically efficient 9x increased field-of-view in raster-scanned image acquisition.
    - Faster panoramic view acquisition without the need for multiple cameras or mechanical motion.
    - Accesses a larger region of brain tissue, improving the number of neurons available for therapeutic modulation.
- More reliable - motion-free scanning minimizes mechanical failure.
- Versatile - addresses multiple field-of-views (axial and transverse) in the sample space.
    - Rapid scanning both across the brain (e.g. cortex, somatosensory and motor), and depth (layers II/III and IV) to create a large field-of-view composite without mechanically disturbing the sample.

- Drop-in solution – minimal changes to existing microscopes in the field.
- Less expensive - up to $50k less than dedicated large FOV microscopes.

Patents

- Published Application: 20180284417
- Issued: 11,294,165 (USA)

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