PURDUE INNOVATES | Office of Technology Commercialization

Geometric Transformation based Adaptive Optics for Large Volume Imaging through Miniature GRIN Lenses

Dual-lens system that eliminates blur for high-resolution, large-field endoscopic imaging.

Biological tissue imaging is very challenging due its fragility. GRIN lenses, which are used in endoscopes for minimally invasive biological tissue imaging, traditionally have produced blurred images if light passes through the edge of the lens. This limits the lens's field of view and throughput. Researchers at Purdue University have created an optics system using gradient-index (GRIN) lenses that provides large-field, high-throughput, high-resolution imaging. It achieves this by using two GRIN lenses and rotating the scanning path of the second GRIN lens 90 degrees relative to the scanning path of the first GRIN lens. This focuses the blurry image resulting from light passing through the edge of the first GRIN lens.

Advantages:

- High resolution

- High throughput

- Large field

Applications:

- Endoscopic imaging of biological tissues

TRL: 3

Intellectual Property:

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