

# The Office of Technology Management

UNIVERSITY OF TEXAS  ARLINGTON

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## Bio-compatible and Bio-configurable Optofluidic Lasers

**INVENTORS:** Yuze Sun

### TECHNOLOGY NEED

Providing health care in resource-limited settings is one of the foremost applications of optofluidic devices. Bio-sensing by means of optofluidic lasers is emerging as a less invasive and more efficient technology, without compromising the performance. In optofluidic lasers, bio-sensing and bio-control *in vitro* and *in vivo* takes place almost exclusively in aqueous environment. However, the existing optofluidic lasers cannot be readily adapted for biological process/event since, it changes gain material properties and this change will compromise laser output. Additionally, they are difficult to be reused or reconfigured, or easily mass-produced to form a robust laser. Therefore, a need exist for improved optofluidic lasers for high-throughput bio-sensing applications.

### INVENTION DESCRIPTION/SOLUTION

UTA researchers have developed a novel optofluidic laser with ultra-high detection sensitivity and selectivity. The novel laser is the first bio-compatible and bio-configurable all-liquid laser technology, that uses small quantities of self-assembling gain material, thus reducing background fluorescence. With low lasing threshold and high Q-factor, the novel optofluidic laser is cost-effective, reconfigurable, reproducible and highly efficient for mass production to form high-throughput laser arrays.

### APPLICATIONS

- Point-of-care medical devices
- Molecular diagnostics
- Miniaturized on-chip coherent light source
- Bio-detection
- Adaptive and reconfigurable lasers
- Personalized medicine and diagnostics

### KEY BENEFITS

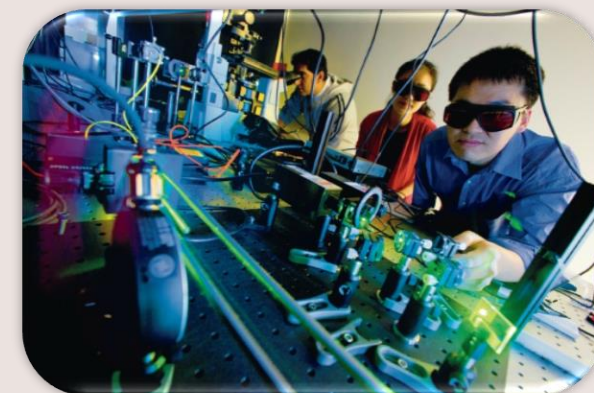
- Ultra-high detection sensitivity
- Customizable for size, shape and gain material
- Bio-compatible and bio-configurable
- Low cost and reproducible
- All-liquid laser technology

### STAGE OF DEVELOPMENT

Tested and Prototype phase

### INTELLECTUAL PROPERTY STATUS

Issued Patent



**More about the Inventors:**  
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The inventor was awarded a \$500,000 NSF CAREER grant to develop all liquid optofluidic laser.

### Contact information

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