



**UNSW**  
SYDNEY



## Optical Sensing Networks

**Optical solutions for industrial and biomedical sensing applications. These include monitoring under hazardous conditions such as those found in petrochemical plants, mines and food processing environments, and monitoring and imaging of neuronal activities in biological tissues such as those found in the brain, retina and muscle.**

### Competitive advantage

Most sensing technologies are electronic in nature, requiring power and signal cables running back to a central location. Such systems are impractical in hazardous environments such as flammable or explosive atmospheres.

This is a breakthrough platform technology in the form of optoelectronic transducers capable of optically reading the output of standard electronic sensors and transmitting their output via optical fibre for processing. This technology, based on ferro-electric liquid crystals, has also been applied to the detection of neural activities in biological tissues, providing a means to develop the next generation of brain-machine interfaces. It also forms the basis of a new class of monolithic integrated Q-switch lasers.

Strong track record in commercialisation of technology through collaboration with industry, creating start-ups and raising venture capital.

### Impact

- New and safer sensing

### Successful applications

- Zedelef —spinoff company created to commercialise research outcomes
- A new high performance optical telemetry system for ocean monitoring
- Currently commercialising two patented technologies: brain machine interface and integrated monolithic Q-switched lasers

### Capabilities and facilities

- Access to a number of important resources including:
- Two photonics labs for characterisation and materials
- The Australian National Fabrication Facility (ANFF)

### More Information

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