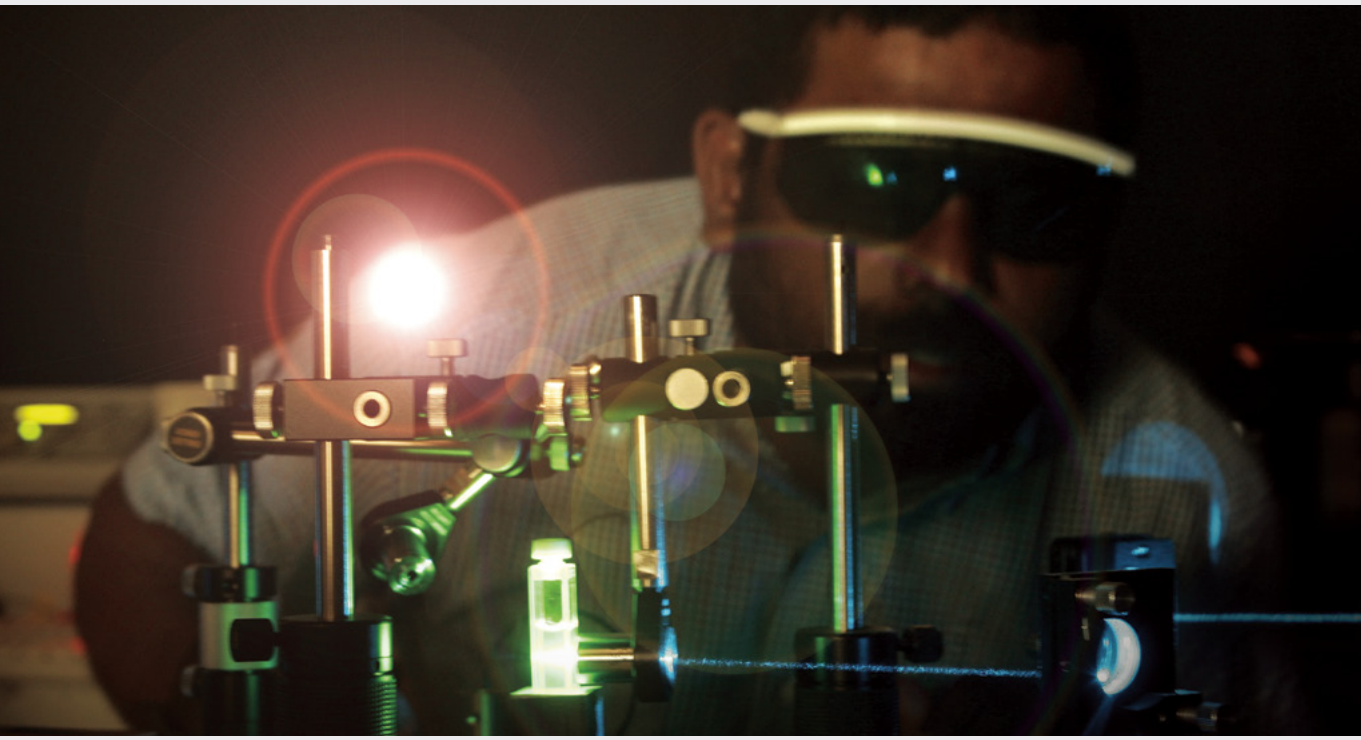
INDUSTRIAL RESEARCH LIMITED
Te Tauihu Pūtaiao



New technologies for next-generation biomedical imaging and dosimetry

Industrial Research Limited is collaborating with Victoria University and GNS Science on new optics-based technologies for biomedical imaging and dosimetry.

Current prototype development

- Portable and low cost x-ray reader for x-ray imaging plates *(see Figure 1).* The device uses existing commercial x-ray imaging plates and an all-optical readout method
- Portable fibre optic dosimeter system *(see Figure 2).* This is being designed so that the dose and dose rate can be read out during irradiation, while the cumulative can be read out at any time after irradiation
- Portable optically-stimulated luminescence dosimeter reader *(see Figure 3).* The intensity of the fluorescence can be used to determine the radiation dose.

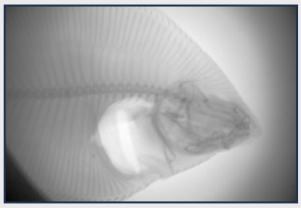


Figure 1. An x-ray image of a flounder, using a portable x-ray reader.

Current research

- High spatial resolution dual energy x-ray imaging plates (e.g. for better bone/tissue discrimination)
- New scintillator materials for better matching of the peak emission wavelength to the detector as well as high transparency that can lead to high conversion efficiencies (e.g. for PET)
- Radiation dosimeters and 2D dosimeters (e.g. for fibre optic dosimeters, radiation distribution)
- THz imaging systems (e.g. for skin imaging)
- Advanced polymers, plastics, and organic linear and non-linear optical compounds.

Figure 2. A portable fibre optic dosimeter.

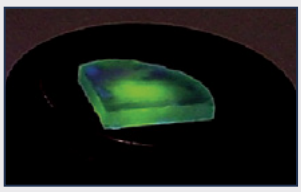


Figure 3. The fluorescence from a compound that was excited with UV light.

Core technologies

- A key patent on new transparent glass-ceramics for high spatial resolution x-ray imaging plates. Ten micron resolution has been demonstrated
- New radiation dosimeter materials with high sensitivity (patent pending)
- Discovery of new glass-ceramics for neutron imaging
- A suite of designer polymers, plastics and organic compounds that are available for purchase.

Key capabilities

- Radiation physics, materials physics, solid state physics, optics, polymer synthesis, nanoparticle synthesis, electronics and equipment design
- Access to medical imaging and dosimetry consultants as well as end users in New Zealand
- International collaborations with other world-leading researchers
- Multidisciplinary team and a demonstrated track record that includes more that 300 refereed publications.

For all enquiries please contact the Industry Engagement team on 0508 CALL IRL (0508 225 5475).
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