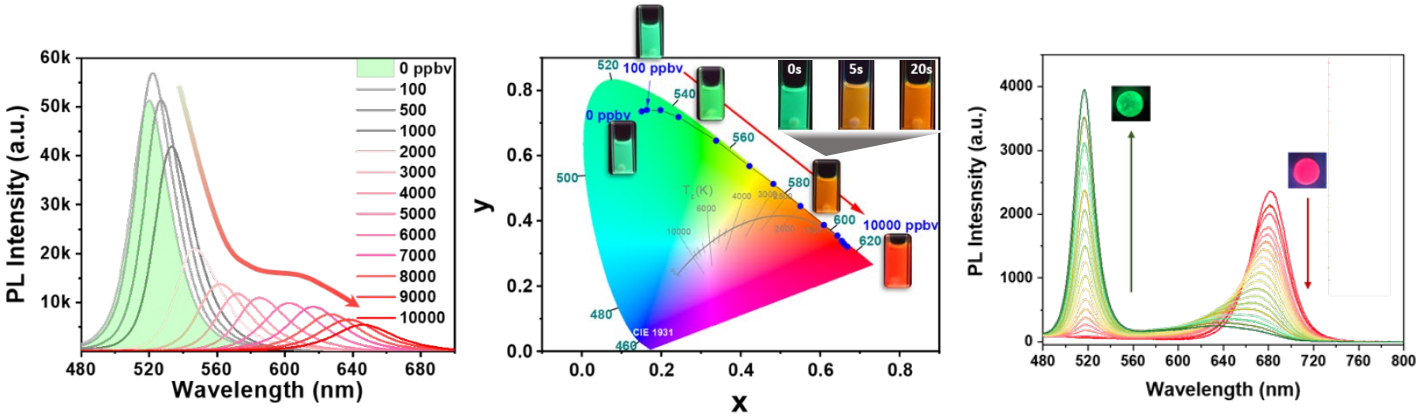
Luminescence-based Methyl bromide & Methyl iodide sensor

PHYSICAL SCIENCES: Materials

The Challenge	The current technologies for detection of the highly toxic fumigation gases Bromomethane (methyl bromide) and Iodomethane (methyl iodide) lack the required selectivity and sensitivity, as well as having a slow reaction time.
The Solution	We have developed a new photoluminescence sensing platform based on perovskite nanoparticles which has shown excellent sensing response to Methyl bromide and Methyl iodide fumigants.
Key benefits	• Excellent Selectivity and Sensitivity • Low Limit of Detection (up to 0.03 ppm, linear change from 0.1ppm) • Fast Response Time • No Calibration Required • Ease of Detection
Development Stage	Proof of Concept
Brief Description & Differentiation	Perovskites are an emerging material class that have compositionally-dependent photoluminescent properties. The technology uses perovskite nanoparticles as selective photoluminescent sensors for Iodomethane and Bromomethane detection. These sensors can be fabricated in liquid or solid phases and can be effectively used for the selective detection of liquid or gas species.
Research Team	ARC CoE for Exciton Science, led by Prof Jacek Jasieniak, Material Science and Engineering.
Intellectual Property	Australian Provisional Patent filed

➢ Key Data



Perovskite Composite Sensing Performance in Methyl Iodide Liquid Detection.

Colour Coordinate Change of a Perovskite Solid Sensor upon Exposure to Methyl Bromide gas.