



INLIGHT®

OSL-based system dosimeter

InLight dosimeter provides X, gamma and beta radiation monitoring with Optically Stimulated Luminescence (OSL) technology.

InLight can be used for occupational, area/environmental, and emergency response monitoring, in any kind of facilities. More than 2 million people in the world are monitored with OSL LANDAUER dosimeters.

THE STATE-OF-THE-ART

- Energy range: from 15 keV to 6 MeV
- Linear deviation < 5 % from 0.05 mSv to 10 Sv
- Angular response $\pm 60^\circ$ from 15 keV
- High sensitivity leads to low depletion, full reanalysis capabilities
- No calibration required, sensitivity engraved on detectors
- Four dots dosimeters giving insights on irradiation energy distribution

InLight allows you to get easily and quickly the ISO/IEC 17025 accreditation.

InLight dosimeters are provided in combination with readers, annealers, softwares and so on, for a total turnkey dosimetry solution.



InLight dosimeter



InLight[®], the new reference in dosimetry

More practical, more efficient, more reliable

DISCOVER NEW PERFORMANCES FOR OCCUPATIONAL MONITORING

A complete dosimetry system

InLight dosimeters work with a complete dosimetry system for onsite dosimetry. LANDAUER OSL solution offers badges, readers, annealers, softwares and so on. Scalable, it can be configured to complement your current in-house dosimetry program. With InLight, you will get easily and quickly the ISO/IEC 17025 accreditation!



Robust, compact and lightweight dosimeter

Fully personalised and customisable

OSL TECHNOLOGY

Based on $Al_2O_3:C$, Optically Stimulated Luminescence (OSL), our technology is used exclusively worldwide for radiation monitoring. The detectors material is manufactured by LANDAUER according to the highest standard specifications. The technology benefits 30 years of regular improvement. OSL features and benefits are:

- **Fully optical, no heating:** the readout process uses a light-emitting diode (LED) to stimulate the detectors and the light emitted by the OSL material is detected and measured by a photomultiplier tube using a high-sensitivity photon counting system. The amount of light released during optical stimulation is directly proportional to the radiation dose and the intensity of stimulation light.
- **Dose algorithms meet several accreditation bodies requirement** such as US National Voluntary Laboratory Accreditation Program, and Department of Energy Laboratory accreditation Program accreditation requirements.
- **High sensitivity minimizing the stimulation:** the optical stimulation keeps more than 99 % of the information. The non destructive readout process of OSL $Al_2O_3:C$ detector enables dosimeters to be archived and allows multiple reading in case of dose investigation. The detectors can be reused for several years.
- **Stable sensitivity over time:** OSL dosimeters sensitivity is defined forever. The stability of the material under any environment condition makes this sensitivity unchanged during all dosimeter's life.
- **No calibration is required.** The sensitivity of InLight is determined during the manufacturing process by an ISO/IEC 17025 accredited laboratory. The sensitivity value engraved on the detector is automatically considered during the reading process.
- **No fading:** InLight dosimeters make extended wear period possible as well as dosimeters archived reread without corrections for fade.



OSLR
Automatic Readers

To settle your own program, take the advantage of the experienced and worldwide dosimetry leader in passive dosimetry services.

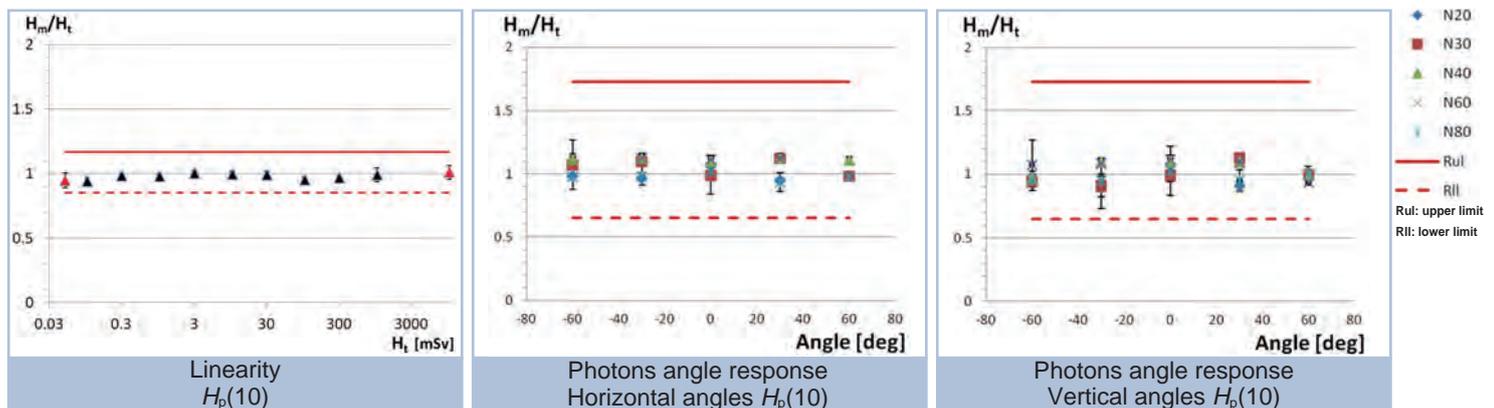
INLIGHT, SIMPLY MORE EFFICIENT

A new detection system

The dosimeter InLight is based on a new dosimeter design and a new generation of dose equivalent estimation algorithm. With InLight, you get a more accurate estimation of the dose equivalent at low doses.

Higher performances

InLight complies with all of the IEC 62387-1: 2012 standard. Its characterisation by an independent laboratory (LNHB) shows metrological performances higher than the standard requirements: linear deviation < 5 % from 0.05 mSv to 10 Sv, energy dependency < 11 % from 16 keV to 6 MeV, angle dependency < 13 % for the photon and < 14 % for the beta. Then InLight has an excellent angular response to $\pm 60^\circ$ for the photons.



RuI et RlI : acceptable limits defined in the IEC 62387-1: 2012 standard. H_m : measured value. H_t : conventional value (true value)

TECHNICAL PERFORMANCE

Type of measured radiation	Result of the InLight dosimeter	
	Photons	Beta
Personal dose equivalent	$H_p(10)$ and $H_p(0.07)$	$H_p(0.07)$
Dose range	0.05 mSv to 10 Sv	
Linearity response	0.05 mSv to 10 Sv - Standard deviation < 5 %	
Measurement reproducibility	< 5 %	
Energy response (mean energy)	15 keV to 6 MeV ($E_{max} = 18$ MeV)	250 keV to 1 MeV ($E_{max} = 2.2$ MeV)
Energy dependency	Weak, < 11 % from 15 keV at 6 MeV	
Angular response (horizontal and vertical angles)	$\pm 60^\circ$ from 15 keV	$\pm 45^\circ$ from 250 keV
Angular dependency	Excellent - Average deviation < 6 %*	
Fading	< 1.5 % / month	
Neutrons detection	Insensitive to neutrons	

* Average gap beside the true response

> ENVIRONMENTAL RESISTANCE CHARACTERISTICS

Operating and storage temperature	-10 °C to 40 °C
Humidity	0 % to 90 %
Light exposure	Tested up to 1,000 W/m ² - Compliant with IEC 62387-1:2012 standard requirements

> GENERAL CHARACTERISTICS

Manufacturer	LANDAUER
Radiation measured	Photons (X- and gamma rays) and beta
Detector	GA or GN new detector
Materials	Aluminium oxide. doped with carbone, Al ₂ O ₃ :C
Filters	Open window, aluminium, titanium, tin
Dimensions without clip	35 mm x 74 mm x 10 mm
Weight	17 g
Dosimeter identification	1D / 2D barcode
Operational dose quantities	$H_p(10)$, $H_p(0.07)$, $H'(10)$



GN detector

Detector filters
 - Open window
 - Aluminium
 - Titanium
 - Tin



> MEASUREMENT METHOD

The read out process uses a LED (Light Emitting Diode) to stimulate the detectors. The light emitted by the OSL material is measured by a photomultiplier tube (PMT) using a high sensitivity photon counting system. The amount of light released during optical stimulation is directly proportional to the radiation dose and the intensity of the stimulation light. A dose equivalent estimation algorithm is then applied to the measurement.

> COMPLIANCE WITH STANDARDS

IEC 62387-1:2012 - Passive integrating dosimetry systems for personal and environmental monitoring of photons and beta radiation - Radiation protection instrumentation.

> QUALIFICATIONS OF OUR LABORATORY

- Participation in national and international inter-comparisons
- Characterisation of dosimeters carried out by an independent referenced laboratory : The French National Laboratory Henri Becquerel (LNHB) - CEA.
- LANDAUER OSL systems are already used by 200 laboratories in 60 countries worldwide most of them being accredited under ISO/IEC 17025.

