Get the Reassurance of a Second Opinion on Patient Radiation Dose
Why Measure Patient Dose?
You can’t improve what you don’t measure

Patient safety in radiation oncology is the focus of public attention and regulatory scrutiny. Greater complexity of treatments and evolving standards are further raising the bar for radiation safety, and increasing risk to healthcare organizations.

There are many reasons to independently verify planned dose during or prior to the first fraction of radiation treatment as part of a patient quality assurance program, including compliance with professional practice guidelines, risk reduction, and improved safety and quality of care.

Patient-specific dose measurements offer your organization an important tool for early identification and correction of potential errors or deficiencies in the delivery of prescribed dose. LANDAUER’s OSL technology, featuring nanoDot™ medical dosimeters and the microSTAR® ii medical dosimetry system offer a simple, flexible, wireless alternative to diodes or mosfets for in vivo\(^1\) dosimetry, and can also be used with a QA phantom to verify machine output.

**LANDAUER’s OSL-Based Dosimeters**

*The most trusted technology for measuring occupational radiation dose, now customized for medical dosimetry applications.*

\(^1\) In vivo refers to superficial dose.
Radiation Oncology
Verify planned dose

Join leading radiation oncology authorities by choosing LANDAUER's® state-of-the-art OSL technology for dose verification.

Radiological Physics Center
For more than 30 years, the Radiological Physics Center (RPC) in partnership with the National Cancer Institute (NCI) has used TLDs for remote audits of photon and electron beam output, and energy verifications for electron beams, monitoring more than 1,700 radiation therapy facilities worldwide and measuring more than 13,000 beams annually. In 2010, after conducting a multi-year clinical evaluation of the technology, the RPC converted to use of OSL dosimeters in over 90% of its remote audit program.

“If I could only buy one dose verification system, I would buy OSLD, because OSLD can do every measurement that TLD and diodes can do, plus measurements they cannot accurately capture.”1 - Paul A. Jursinic

Paul A. Jursinic, Ph.D., is renowned among medical physicists for his rigorous focus on QA. Dr. Jursinic investigated a wide range of technologies for efficiency and precision in comparing measured dose with calculated dose output, and concluded that OSLDs are a superior substitute for TLDs and diodes for in vivo dosimetric measurements, particularly for surface dose measurements.

TLD
- Labor Intensive
- Time Consuming

Diodes & Mosfets
- Procedure-specific (multiple diodes needed for multiple energies)
- Wires may be obtrusive during use
- Not durable

OSLD
- Simple
- Flexible
- Wireless
- Energy independent in therapy range
- Ideal for point dose measurements
- Proven superior accuracy and precision

nanoDot™ OSLD
Individually bar-coded nanoDot™ dosimeters enable complete chain of custody
nanoDOT™ Medical Dosimeters - a simple, flexible solution for measuring patient radiation dose

Regulatory authorities and experts agree that reducing potential for error or deficiencies in the delivery of prescribed dose in radiation oncology is a priority. LANDAUER’s OSL technology featuring nanoDot™ medical dosimeters and the microSTAR® ii medical dosimetry system is a simple, flexible, wireless dose verification solution.

For over 13 years, OSL technology has been trusted to measure occupational radiation dose for millions of healthcare professionals across the globe. OSL dosimeters are used for occupational dose monitoring in over 80% of hospitals in the United States and are the focus of more than 30 published peer-reviewed scientific publications.

LANDAUER’s nanoDot™ OSL-based medical dosimeter is the most effective tool to independently verify the quantity of dose delivered during radiation treatments and provides an inexpensive insurance policy to mitigate risk for your facility.

nanoDOT™ Medical Dosimeters
- Wide operating energy range (5keV to 20 MeV) makes nanoDot™ medical dosimeters an ideal solution for dose verification in radiation oncology and other point dose measurement applications
  - Linear dose response with dose up to 3 Gy, software-supported non-linear calibration up to 15 Gy
  - Reanalysis capabilities (non-destructive readout)
  - Dosimeter preparation eliminated with single-use dosimeters
  - Minimal angular or energy dependence in Megavoltage energy range
  - Accurate within ± 5% for photons and electrons from 5MeV - 20MeV*
  - Dosimeter can be placed anywhere on the body, is wireless, and radiolucent
  - Ideal for measuring dose at a point of interest, even in challenging clinical conditions
  - Can be used for in- and out-of-field measurements, including pacemaker dose
  - Dosimeter can be used without buildup to make surface dose measurements or with buildup to make measurement at depth.**

nanoDot™ Medical Dosimeter

The nanoDot™ is a compact, robust medical dosimeter ideal for a variety of dosimetry applications, such as, secondary dose verification in radiation oncology and other point dose measurements.

* When reader is calibrated per recommended protocols and microStar QA program is implemented.
** The reader calibration must be consistent with the clinical use mode in terms of build-up characteristics.
With microSTAR® ii Medical Dosimetry System, using nanoDots is simple and efficient

**microSTAR® ii Medical Dosimetry System**
- Immediate, independent verification of planned dose using nanoDot™ medical dosimeters
- Improved readout precision and durability with state-of-the-art pulsed OSL technology
- Fast, efficient single dosimeter readout
- Compact, lightweight and portable
- Operates with a client-provided PC running Windows 7 (optional laptop sold separately)

Software customized to medical dosimetry applications for streamlined analysis, reporting and reimbursement
- Built-in and automated QC functionality for efficient implementation of the LANDAUER microSTAR® reader Quality Assurance Program
- Patient-centric workflow, with additional fields for patient and exposure information
- Automated re-reading capability for improved accuracy and efficiency
- Built-in dose reports to streamline reimbursement
Your Clinical Team

- Provide quality patient care and outcomes
- Execute Quality Assurance program that reinforces patient safety initiatives
- Build trust in your community

**microSTAR® ii Medical Dosimetry System**

- Establish a continuous patient and instrumentation quality assurance program for radiological procedures
- Independently verify planned dose
- Simple, flexible, wireless solution for patient-specific dose measurements
- Tested and adopted by leading credentialing authorities for radiation dose measurement

**LANDAUER® Implementation and QA Program Support**

- In-house experts available for consultation to assist medical physicists implementing a new OSL-based medical dosimetry system
- For facilities without in-house medical physics expertise, LANDAUER(R)'s team of Qualified Medical Physicists can provide guidance on implementation of a medical dosimetry QA program that fits the unique requirements of your facility
LANDAUER®

The global leader in radiation safety

For over 55 years, LANDAUER’s® innovations in radiation science and services have been instrumental in shaping the industry. With our expansive team of health and medical physicists and our dedication to advancing knowledge through investment in education, scholarships, R&D, and collaborative research partnerships, LANDAUER® is the only private organization committed to the comprehensive study of dosimetry.

LANDAUER® works closely with both customers and government entities to develop best practices in risk mitigation and guide the development of occupational and public health and safety regulations. Our historical practice of dosimeter archiving has resulted in the only existing national registry of exposure data. With Landauer Medical Physics, we have expanded our capabilities to provide clients with end-to-end radiation safety solutions to measure radiation exposure, manage data and improve patient outcomes through the safe and effective use of radiation in medicine. No organization is better equipped to support the safe use of medical radiation.
LANDAUER® The global leader in radiation safety.

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To minimize our environmental impact, this brochure was printed using renewable energy on papers containing fibers from environmentally appropriate, socially beneficial and economically viable forest resources.

***The microStar® dosimetry reader and nanoDot™ dosimeter is classified as a Radiologic Quality Assurance Instrument, and should not be used to adjust the radiation dose delivered to a patient

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