



nanoDots are read directly in the microSTARii reader

This is a nanoDot with alphanumeric sensitivity code and serial number (DN091=0.91 sensitivity). Either the front or back of the carrier can face toward the radiation source during exposure



NanoDot dosimeters are designed for use in single point radiation assessment applications and are engineered to be read by the microSTAR®ii reader. The nanoDot offers complete reanalysis, requires no dosimeter preparation in the clinic and has a labeled sensitivity that is built into the dosimeter 2D bar code for rapid, accurate reading.

Overview

Regulatory authorities and experts agree that reducing radiation errors in medical imaging and radiation oncology is a priority, but there is little guidance on practical strategies. LANDAUER's optically stimulated luminescence (OSL) technology, featuring nanoDot dosimeters and microSTARii readers, provides one universal, simple and flexible solution to this complex problem.

Since 1998, OSL technology has been trusted to measure occupational radiation dose for millions of health care professionals across the globe. OSL dosimeters are used for occupational dose monitoring in more than 80% of hospitals in the United States and are the subject of more than 30 published, peer-reviewed scientific publications.

LANDAUER's nanoDot OSL-based medical dosimeter is an effective tool to independently verify the quantity of dose delivered from radiation producing devices in medical imaging and radiation oncology. It provides an inexpensive insurance policy to mitigate litigation risk for your facility.

Technical Specifications

Dose operating range	For general applications, useful dose range 5 mRad to 1500 rad (50 µGy to 1500 cGy); for medical dosimetry applications, linear response with dose up to 300 rad (cGy), software-supported non-linear calibration up to 1500 rad (cGy)
Lower Limit of Detection (LLD)	5 mrad (50µGy)
Useful Energy Range	From 5 keV to 20 MeV
Energy Dependence	Accurate within ±10% over diagnostic energy range 70-140 kVp; within ±5% for photons and electrons from 5 MeV-20MeV
Accuracy (total uncertainty - single measurement)	±10% with standard nanoDot; ±5.5% with screened nanoDot

Technical specifications above reflect minimum expected performance when the microSTARii reader is operated in compliance with all LANDAUER recommended reader performance quality assurance protocols. Note: The data provided by this product is informational and for quality assurance control purpose. The output of the microSTARii is not used to adjust the dose to the patient.

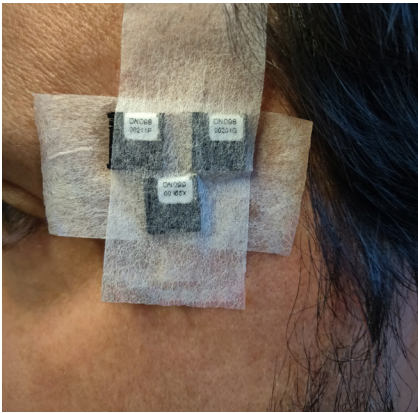


Figure 1



The back of an open nanoDot carrier with 2D bar code that includes sensitivity code and serial number information



Each nanoDot is shipped enclosed in a plastic packet ready for clinical use



The nanoDot is a useful patient dosimetry verification tool

Features and Benefits

- Wide operating energy range (5 keV-20 MeV) makes nanoDots an ideal solution in multiple settings, including diagnostic radiology, nuclear medicine, interventional procedures, radiation oncology or any single point radiation measurement requirement¹
- Complete reanalysis capabilities
 - Non-destructive readout allows for reanalysis and electronic data archiving, dose verification and intermittent analysis for total dose accumulation
 - No post-measurement correction factors required
 - 2D bar code contains dosimeter sensitivity and serial number for chain of custody
- Dosimeter preparation eliminated with single-use dosimeters
 - No heating parameters to maintain
 - No nitrogen gas required
 - No wire to be connected to the monitor or reader
- Minimal angular or energy dependencies with appropriate calibration
 - Can be used to measure skin dose at a point of interest
 - Can be used on curved surfaces (eye, breast) with appropriate angular dependence correction factors applied *see Figure 1*
 - Can be used for in- and out-of-field measurements, including eye dose
 - Used for entrance dose and electron measurements
 - For use in RapidArc or TomoTherapy, total electron skin treatments, HDR, Brachytherapy or other applications
- Dosimeters can be placed anywhere on the body, are wireless and radiolucent
- Dosimeters can be used without buildup to make surface dose measurements or in radiation oncology with buildup to make measurements at various depths²

Note: LANDAUER provides a set of calibration dosimeters exposed at a beam quality of 80 kVp on a PMMA phantom at normal incidence for conventional (non-mammography) diagnostic radiology applications. For radiation oncology applications, LANDAUER provides a set of screened, unexposed calibration dosimeters that can be irradiated using a radiation therapy beam quality of your choosing, or you may alternatively request a calibration dosimeter set exposed to a 662 keV beam quality (Cs-137).

¹For calibrating microSTARii readers appropriately, separate calibrations should be performed for diagnostic and therapeutic energies

²CIRS Plastic Water nanoDots buildup available in three sizes - 1.5cm, 1.0cm, or 0.5cm.

Contact CIRS 800-617-1177 or cirsinc.com to order

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