Dutch-based company with expertise in quantum dot materials and in-house CMOS/TFT processing for next-generation SWIR and X-ray sensors is looking for partners in medical imaging, machine vision, security, industrial inspection and defense applications

Summary

Profile type
Technology request

Company's country
Netherlands

POD reference
TRNL20250801015

Profile status
PUBLISHED

Type of partnership
Investment agreement
Research and development cooperation agreement
Commercial agreement with technical assistance

Targeted countries
• World

Contact Person
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Term of validity
8 Aug 2025
8 Aug 2026

Last update
8 Aug 2025

General Information

Short summary

A Dutch company develops scalable imaging solutions based on proprietary quantum dot (QD) technology for short-wave infrared (SWIR) and X-ray applications. Their CMOS-compatible sensors provide a high-resolution and cost-effective alternative to existing technologies. Application fields include medical diagnostics, security, precision agriculture, and industrial inspection. The company is seeking international partners for research cooperation, commercial integration, and investment.

Full description

A Dutch company founded in 2019 develops advanced imaging technologies using proprietary quantum dot (QD) materials. The company specializes in scalable solutions for short-wave infrared (SWIR), near-infrared (NIR), ultraviolet (UV), and X-ray image sensors. Their in-house capability for CMOS and TFT processing supports monolithic integration of QD layers, offering unique performance and cost advantages.

The company’s QD-based SWIR image sensors overcome key limitations of traditional SWIR detectors, which are typically bulky, low in resolution, and expensive due to reliance on materials like InGaAs. The company’s solution

enables seamless operation from 400 to 1700 nm, with external quantum efficiency (EQE) around 20% across the spectrum and potential peak efficiencies up to 50–60% after spectral tuning. This makes it suitable for industrial inspection, environmental monitoring, precision agriculture, medical diagnostics and defense applications.

In X-ray imaging, the Dutch company is pioneering the world's first direct-conversion X-ray detectors based on quantum dots. These replace traditional scintillator-based conversion layers and enable increased sensitivity, higher image resolution, and reduced radiation doses. The technology is well-suited to applications like mammography and general radiography.

The company's proprietary quantum dot ink can be deposited directly on CMOS wafers using standard deposition methods, facilitating monolithic sensor integration and enabling compact, high-performance, and scalable devices. Their manufacturing platform is cost-efficient and supports large-area sensors, having already scaled from single-die CMOS chips to full-frame mammography sensor formats and 8" industrial wafer size.

The Dutch company specializes in the reliable and scalable synthesis of quantum dots, supplied as an ink ready for deposition and use in semiconducting devices. We have successfully developed SWIR sensors on CMOS chips, initially through single-die processing, and soon expanding to industrial 8" wafer scale. Additionally, we have created the first direct-conversion X-ray sensor based on quantum dots, with deposition successfully scaled up to full-frame mammography sensor sizes.

Cooperation types include commercial agreements with technical assistance, research and development collaboration, and investment partnerships. These cooperation formats will support the continued development, field testing, and scaling of the company's imaging technologies. International cooperation could include system integration, performance validation, regulatory support, and commercialization strategies.

The Dutch company is particularly interested in collaborating with sensor manufacturers, system integrators, investors, research institutions, and medical device companies that can support the development and deployment of QD-based imaging systems in global markets.

Advantages and innovations

Their quantum dot (QD)-based SWIR imaging technology provides a cost-effective and high-resolution alternative to traditional SWIR sensors. This is achieved through the solution-processable synthesis and application of QDs. The deposition of QD films from specialized inks can be seamlessly integrated into existing wafer-level fabrication facilities. These films can be directly deposited in a single step onto a CMOS wafer using standard deposition techniques, enabling monolithic sensor integration.

The QD SWIR sensors operate across a broad spectral range from 400 to 1700 nm, achieving external quantum efficiencies of around 20% over the entire range, with a possibility to reach peak efficiency of 50–60% after spectral tuning. These innovations open up new opportunities for widespread adoption in industrial inspection, environmental monitoring, precision agriculture, security, and medical diagnostics, where cost, performance, and integration flexibility are critical for deployment at scale.

Their quantum dot-based X-ray imaging technology provides significantly higher X-ray sensitivity compared to current state-of-the-art materials. This enhanced sensitivity enables clearer and more detailed X-ray scans, improving diagnostic accuracy. Additionally, it allows for a substantial reduction in the radiation dose for the patients, enabling safer and more patient-friendly diagnostics without compromising image quality.

Technical specification or expertise sought

The Dutch company is seeking international partners with strong technical expertise and/or research capabilities in the fields of image sensor development, quantum materials, CMOS and TFT integration, and advanced imaging

system design. The ideal partner could contribute not only to the further development, validation, integration, or industrial scaling of quantum dot-based SWIR and X-ray sensors, but also to the joint exploration of market opportunities, acquisition of new customers, and development of commercially viable imaging solutions. The company welcomes collaborations that combine technical excellence with a shared ambition to generate impact through business growth and international market access.

In particular, the company is looking for:
Sensor technology developers and electronics specialists who can support the development of read-out integrated circuits (ROIC), system-on-chip integration, and hardware design tailored for high-sensitivity imaging. In addition to technical collaboration, the company is looking for partners who can help identify new application domains, co-develop customer-driven solutions, and support the commercial rollout to generate new market opportunities.

Academic institutions, universities, and applied research centres with expertise in quantum dot materials, optoelectronics, device physics, or imaging system optimisation, to engage in joint research and co-development. The Dutch company is also open to partnerships with research entities that have industry connections or technology transfer offices willing to explore routes for valorisation and collaborative business development.

Medical technology partners and radiology experts to collaborate not only on clinical validation, testing protocols, and regulatory approval processes for X-ray imaging (e.g. mammography, diagnostic imaging), but also on defining new clinical use cases, accessing hospital networks, and scaling adoption through joint promotion and business case development.

Industrial partners in machine vision, agriculture, and environmental monitoring to support field testing, benchmarking, and system integration of SWIR imaging prototypes. These partners are also expected to contribute to identifying customer needs, defining value propositions, and co-developing commercial applications that lead to revenue growth and client acquisition.

Investors or public-private consortia who are not only interested in scaling quantum imaging technology and joining innovation projects (e.g. Horizon Europe, EIC Pathfinder/Transition), but also in helping build strategic alliances, expand sales channels, and drive international market penetration.

Stage of development

Already on the market

Sustainable Development goals

- **Goal 8: Decent Work and Economic Growth**
- **Goal 9: Industry, Innovation and Infrastructure**

IPR Status

IPR granted

IPR Notes

Partner Sought

Expected role of the partner

There are several roles a partner can play such as consortium partner for large international programs, providing ROIC electronics, joint research and development, consortium partner for large international programs, system integration, lab testing, field validation, performance benchmarking, regulatory support, and helping with commercialization strategiesSpecifically, they seek:
- Sensor/device manufacturers or developers: to incorporate QD-based sensors into new or existing imaging systems.
- Electronics and ROIC providers: to support integration of read-out electronics and hardware compatibility.
- System integrators and industrial users: to test and validate the technology in field environments.
- Medical device developers and diagnostic imaging firms: to explore use in mammography, radiography, or other diagnostic applications.
- Research institutions and engineering partners: to support further optimization, spectral tuning, and benchmarking.
- Investors and funding agencies: to accelerate scaling of production and international market entry.
- Regulatory and commercialization experts: to support certification processes and go-to-market strategy.

Partners are expected to engage in joint research, co-development, field trials, or provide industrial integration or financial support. Involvement in European or global R&D projects is also welcomed.

Type of partnership

Investment agreement

Research and development cooperation agreement

Commercial agreement with technical assistance

Type and size of the partner

- **University**
- **Big company**
- **R&D Institution**
- **SME 50 - 249**
- **SME 11-49**

Dissemination

Technology keywords

- **01002012 - Semiconductors**
- **01002011 - Quantum Informatics**

Market keywords

- **05002001 - X-rays**
- **03001001 - Semiconductors**

Targeted countries

- **World**

Sector groups involved

- **Digital**