

## 2022年2月9日、オランダにおけるナノ・フォトニクス

日本向けオンライン説明会、Quantum-Photonics-Nano 分野での日蘭関係作りイベント  
(English below) 対象招待者に転送可

2021年12月吉日

関係各位

近年に世の中で早く進むデジタル転換 DX の中、安全・持続・経済・健康などの社会各面を維持するために、抜本的なハイテクソリューションが求められます。量子技術・フォトニクス・ナノの関連業界から重要な提案が出されています。日本とオランダはその技術開発と産学官連携において国際的なリーダーであり、その貢献をさらに強化するため両国の協力関係作りを促進しております。

去る7月8日の「[Launch Event](#) on Quantum-Photonics-Nano」のフォローアップとして、**2月9日(水)**にオランダにおけるナノ・フォトニクスの最近の活躍を説明するオンライン説明会を開催する運びとなりました。発表者は、オランダ全国のフォトニクス関連の企業と研究所が一緒になる [Photon Delta NL](#) の代用者、また、2018年から活躍している日本との関係作りを目指すオランダ官民クラスター「[PIB-Nano](#)」のメンバー企業となっております。東京大学 IIS の平川一彦教授がご挨拶してまいります。

本イベントは、両国のお互いの強み・目標などをより深く理解するために開催するイベントシリーズの一つであり、最終的に有効かつ友好的な二国間パートナーシップを目指します。カレンダーは左表の通りで準備しており、量子技術・フォトニクス・ナノでの接点が多いため全イベントに Quantum-Photonics-Nano 全般の産学官関係者を対象いたします。なお、コロナで可能な限り、来年後半にオランダより日本の Quantum-Photonics-Nano 産学官使節団を計画しております。

Series of bilateral online events (partly confirmed)			
Date	Topic	Presenter	Audience <sup>1</sup>
16-19 Nov '21	Photonics	<a href="#">NTT IOWN Forum</a>	Netherlands <sup>2</sup>
24 Nov '21	Quantum	RIKEN	Netherlands
11 Jan '22	Quantum	Keio University	Netherlands
✓ 9 Feb '22	Nano-photonics	- Photon Delta NL - PIB nano	Japan
Q1 '22	Quantum-Photonics	SIP Quantum-Photonics	Netherlands
Q1 '22	Quantum	Quantum Delta NL	Japan
Q1 '22	Optics	Dutch Optics Center	Japan
Q3 '22 plan Physical Mission to Japan on Quantum-Photonics-Nano			

<sup>1</sup> Target audience for all events: professionals in field of Quantum-Photonics-Nano of the indicated country. <sup>2</sup> The IOWN Forum is open to other countries.

- Title: Nano-Photonics in the Netherlands
- Date/time: **Wednesday 9 February 2022, 17:00-18:30JP (9:00-10:30NL)**
- Venue: Webinar (link follows registration)
- Organizer: Netherlands Embassy in Tokyo, Photon Delta NL and NL Enterprise Agency (RVO)
- Agenda outline:
  - Opening by Embassy;
  - Introduction by Photon Delta NL
  - Remarks Japanese side by Prof. Kazuhiko Hirakawa (The University of Tokyo)
  - Introduction by PIB-Nano member Companies (2 breakout Sessions)
  - Q&A, discussion, looking ahead
- Target audience: Japanese professionals from government, industry and knowledge institutes, working in cutting-edge forefront of quantum, photonics and nano
- Language: English
- Registration: Click this [link](#) to register. A few days before the event, we will send you a link to join online. If you cannot enter the link, contact below contact persons.
- Contact:
  - In JP: Rob Stroeks, Netherlands Embassy, rob[@]hollandinnovation.jp, +81-(0)90-8642-3560
  - In NL: Tong Jiang, Netherlands Enterprise Agency RVO, Tong.Jiang[@]rvo.nl, +31-(0)6-1117-8711

ご参加をお待ちしております。

Eric van Kooij エリック・ヴァン・コーイ  
Innovation Counsellor 科学技術参事官  
Embassy of the Kingdom of the Netherlands オランダ王国大使館

## 9 February 2022: Online Event on Nano-Photonics in the Netherlands

Invitation for Japanese Audience, part of bilateral relation building for Quantum-Photonics-Nano  
Please forward to relevant Japanese contacts

December 2021

Dear Sir / Madam

The rapid digital transition requires radical high-tech solutions to keep the global social systems running in terms of security, sustainability, economy, health and others. Important parts of these solutions lie in the area of quantum technology, photonics and nanotechnology. The Netherlands and Japan are forefront runners, both in terms of contents and in terms of industry-academia collaboration.

As follow-up of the Netherlands-Japan [Launch Event](#) on Quantum-Photonics-Nano that we organized last July 8, we kindly invite you to an online event on Nano-Photonics on **Wednesday 9 February 2022**. You will be updated on recent nano-photonics developments and ambitions of the Netherlands, by renowned speakers including Mr. Eric van Oorschot, Ecosystem Manager of [Photon Delta NL](#), and companies of the Dutch Public-Private PIB-Nano Cluster that is successfully active in building relations with Japan since 2018. Prof. Kazuhiko Hirakawa of The University of Tokyo will give opening remarks.

The event is part of a series of bilateral events, with the purpose to deepen mutual understanding of strengths and ambitions in The Netherlands and Japan in the fields of Quantum-Photonics-Nanotechnology. Both countries have ambitions to strengthen their relations in these fields. To address the crossovers, we invite professionals from these three areas to all the events. The series of events paves the way to a (hopefully) physical Innovation Mission in 2022.

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Sincerely,

Eric van Kooij  
Innovation Counsellor  
Embassy of the Kingdom of the Netherlands

## Concept Agenda

Wednesday 9 February 2022

Time		Speaker		
<b>JP (NL)</b>	<b>Moderator</b> 司会	Mr. Raoul Oostenbrink Coordinator, Business Cluster Nanotechnology Japan		
<b>17:00 (09:00)</b>	<b>Opening</b> 開会挨拶・目的	Netherlands Embassy in Tokyo		
<b>17:05 (09:05)</b>	<b>Keynote</b> 基調講演	Mr. Eric van Oorschot, Ecosystem Manager Photon Delta NL Overview and ambitions of Photon Delta NL		
<b>17:20 (09:20)</b>	<b>Keynote</b> 基調講演	Prof. Kazuhiko Hirakawa, IIS, The University of Tokyo		
<b>17:30 (09:30)</b>	<b>Break</b> (divide into the Breakout Sessions) 休憩 (ブレイクアウトセッションの準備)			
<b>17:40 (9:40)</b>	<b>Break out 1</b>	<b>Wafer-scale nano imprinting for nano photonics</b>	<b>Superconducting single-photon detectors</b>	<b>In-situ Transmission Electron Microscopy</b>
				
		Rob Voorkamp	Sander Dorenbos	Hugo Perez
		Managing Director	CEO	CTO
<b>17:40 (9:40)</b>	<b>Break out 2</b>	<b>Ultrasensitive Plug-And-Play Photonic Diagnostics Platform</b>	<b>Institute of Nanotechnology</b>	<b>Nanoparticle generators</b>
				
		Luc Scheres	XXX	Maarten Kamp
		CTO	XXX	Commercial Director
<b>18:15 (10:15)</b>	<b>Q&amp;A</b>	Moderator: Mr. Raoul Oostenbrink, Coordinator, Business Cluster Nanotechnology Japan		
<b>18:25 (10:25)</b>	<b>Closure</b>	Netherlands Embassy in Tokyo		
<b>18:30 (10:30)</b>	<b>End</b>			

## Moderator

# Mr. Raoul Oostenbrink

## Coordinator PIB Nanotechnology Japan

Principal at IVX4



Raoul started his professional career in 1999 and has been active in the fields of IT Consulting, Investment Banking, Government, Medical Devices, Life Sciences and Research. His expertise lies with Business Development and Innovation. Raoul has performed various managerial and advisory roles at senior level, for companies such as Ordina, Robeco, Teleflex and TNO. He started his own consulting firm in 2014 with a focus on technology transfer (Science to Business), brokering between universities, corporates, government and start-ups.

### **About Organization**

Assignments vary from managing an accelerator program for the Dutch nanotechnology initiative- NanoNextNL (€ 250 MIO), to laying the ground work for a Robotics Seed Investment Fund (€ 100 MIO). More recent assignments include the roles of Managing Director for MESA+ and for NanoLabNL. Raoul also manages and coaches several start-up companies. Since 2018, Raoul coordinates the Business Cluster Nanotechnology comprising Dutch companies and knowledge institutes- and focuses on strengthening relationships between The Netherlands and Japan in the nanotechnology space.

## Keynote speakers

### **Mr. Eric van Oorschot**

#### **Photon Delta NL**

Ecosystem Manager

Erik van Oorschot is the Ecosystem Manager for PhotonDelta. He looks after the strategy and execution of the international positioning and expansion of the PhotonDelta ecosystem. Among his activities, he also stimulates collaborations with and between ecosystem parties based on technology and product roadmaps. Erik has broad experience in managerial and consulting roles in industry, research and governmental environments. His specialties are in open innovation, R&D roadmaps, public-private consortia and program/project management.



#### **About Organization**

##### [PhotonDelta](#)

To accelerate and reduce time to market, PhotonDelta strengthens the ecosystem from within by stimulating co-operation amongst the integrated photonic companies and knowledge institutions. We are in constant dialog with all our partners, we support each other and help overcome technological and business challenges. PhotonDelta is responsible for the common business strategy, we set goals and stimulate co-operation between partners. We amplify and scale existing companies and kickstart new ones. We are able to do so, since our partners provided significant funding, up to €236million in the timeframe of 2019-2026. In addition to funding, we provide our partners access, knowledge and business development. Access to the National, European and International Network is realised through different partnerships.

(Japanese side)

### **Prof. Kazuhiko Hirakawa**

#### **The University of Tokyo**

#### **Institute of Industrial Sciences (IIS)**

Prof. Hirakawa is Group Leader of the [Quantum Semiconductor Electronics Laboratory](#) of IIS.



#### **About Organization**

Electron numbers, orbitals, and spins are quantized in quantum nanostructures. Such quantization gives rise to novel electronic properties that are not seen in bulk materials. We are working on physics and device applications of such quantum nanostructures to explore new device principles in electronics. One of our research activities is the physics and applications of ultrasmall transistors. Electrical manipulation and read-out of quantum mechanical states in quantum nanostructures by nanogap metallic electrodes is expected to bring about great innovations in ICT devices. We are working on technologies of making contacts to single quantum dots and even single molecules by metal nanogap electrodes and explore physics and applications of such ultrasmall transistors. Another subject is the research on terahertz (THz) devices. The region in the electromagnetic spectrum from 0.1 to 100 THz (THz range) is a frontier area for research in physics, chemistry, biology, materials science, and medicine. However, this frequency range has been unexplored until recently due to the lack of appropriate semiconductor devices. Owing to recent progress in nanofabrication and laser technologies, however, the “THz gap” is gradually being filled. We are investigating novel physics of quantum nanostructures and developing novel THz devices.

## PIB-Nano Cluster Members

### **Rob Voorkamp** **SCIL Nanoimprint solutions**

General Manager



Rob Voorkamp holds Masters in Mechanical Engineering and Business Innovation. Throughout his career, Rob has been leading business high-tech development activities. He has initiated and led several technology licensing deals enabling new start-ups to develop a business based on Philips' technologies.

In 2015 Rob started together with several key inventors the high-tech venture around Philips' Substrate Conformal Imprint Lithography (SCIL).

#### **About Organization**

Many products like smart phones, smart glasses and cars require high-performance optics for sensing and vision applications. Also called nano-photonics. However, for nano-photonics, conventional lithography techniques have drawbacks like expensive tools, complex processes and low yield. With SCIL Nanoimprint lithography complex nanostructures can be produced in high volume at low cost and very high quality. Our cost effective, robust, high yield manufacturing solutions can be used to make patterns with feature sizes down to less than 10 nm and overlay alignment below 1  $\mu\text{m}$ .

SCIL Nanoimprint Solutions helps customers with optimized equipment, consumable materials and processes for high volume production in markets such as smart glasses, sensors, MicroLEDs, Lasers, Metalenses, Wiregrid polarizers and many more.

### **Sander Dorenbos** **Single Quantum**

CEO



Sander Dorenbos obtained his PhD in 2011 from Delft University of Technology on superconducting single photon detectors. He is co-founder of Single Quantum and currently leads the company as Chief Executive Officer. During his PhD, Sander demonstrated the advantages of superconducting nanowire detectors through numerous collaborations, published over 80 articles and paved the way for industrialization of these detectors.

Title: *Superconducting single-photon detectors for quantum communication and quantum sensing*  
Superconducting nanowire single-photon detectors have emerged as the new standard for low level light intensity or single-photon detection, due to their high efficiency, low noise, short time resolution and high repetition rate. In this talk the detector's main features will be presented as well as an overview of their applications: quantum communication and quantum sensing.

#### **About Single Quantum**

[www.singlequantum.com](http://www.singlequantum.com)

Light detectors are crucial components of optical imaging and telecommunication systems. The ultimate photon detector is capable of detecting even an elementary particle of light: a single photon. Single Quantum develops the best single photon detectors based on superconducting nanowires. The SNSPDs (superconducting nanowire single photon detector) are provided with a closed-cycle cryostat, which provides the low temperature environment for the superconducting nanowires. The high performance of our SNSPDs makes them the ideal choice for the most demanding applications.

With satisfied customers worldwide, Single Quantum is known for high quality and reliable detectors. We provide the best solution for your experiment with dedicated customer service.



## Luc Scheres

### Surfix

CTO

Luc is the CTO of Surfix. In 2005 he received his MSc degree in Chemistry and Physics at Utrecht University. Subsequently Luc moved to Wageningen University and obtained his PhD degree (with highest honours) in 2010. After a short post-doc at Eindhoven University Luc founded Surfix in 2011.



#### **Surfix's ultrasensitive plug-and-play photonic diagnostics platform**

The Covid-19 pandemic has made it clear that there is a need to have fast and reliable diagnostic tests available in point-of-care (PoC) surroundings. Well-known tests, like the glucose test for diabetes patients, and the pregnancy test are on the market for decades already. Many other diagnostic tests are still complex, and have to be performed by trained staff on large equipment in specialized facilities. Another setback is that scaling up production of tests, when there is an urgent need for large numbers, is cumbersome and time-consuming, like has been seen during the afore mentioned pandemic. In the last decade, new biosensor technologies have emerged that allow the sensitive and quantitative detection of biomarkers (indicator molecules, e.g. specific proteins or DNA) for conditions like cancer, cardiovascular and infectious diseases. Surfix Diagnostics works on one of those new biosensor technologies, the photonic biosensor.

This ultra-sensitive, fast and label-free technology harbours the possibility of detecting multiple biomarkers at the same time. Features that, along with a low unit cost and the ability to easily scale up production, will revolutionize the world of medical diagnostics by enabling PoC diagnosis and treatment monitoring of a wide variety of conditions.

The Surfix Diagnostics photonic biosensor combines the photonic biochip, in which the actual signal is measured, with a microfluidic cartridge, in which the biological assay takes place in a small sample volume. Both the photonic biochip and the microfluidic cartridge benefit from unique nanocoatings, which enhance the sensitivity of the sensor and the flow of the sample, and reduce unwanted binding of biomolecules. The signal read-out of the photonic biosensor will be performed with a desktop reader.

## Prof. Wilfred G. van der Wiel

### University of Twente

#### **Institute of Nanotechnology, MESA+**

Director of the BRAINS Center for Brain-Inspired Nano Systems



[Wilfred G. van der Wiel](#) (Gouda, 1975) holds a second professorship at the Institute of Physics of the Westfälische Wilhelms Universität Münster, Germany. His research focuses on unconventional electronics for efficient information processing. Van der Wiel is a pioneer in Material Learning at the nanoscale, realizing computational functionality and artificial intelligence in designless nanomaterial substrates through principles analogous to Machine Learning. He is author of 120 journal articles receiving 7,500 citations.

#### **About [BRAINS](#)**

BRAINS is an inter-faculty center of the [University of Twente](#) with over 10 principal investigators from the MESA+ Institute for Nanotechnology, the Digital Society Institute and the Faculty of Behavioural, Management and Social sciences. The center aims to provide coherence and visibility. With its focus and critical mass BRAINS hopes to be a valuable partner in national and international consortia.

**Hugo Perez**

**Dens**

CEO

**Maarten Kamp**

**VS Particle**

Commercial Director