We are hiring!!! Join us for postdoctoral positions in IR spectroscopy and gas sensing

We are seeking talented postdoctoral researchers to join our team for **cutting-edge projects** in gas sensing using **broadband IDFG sources** and photonic integrated circuits (**PICs**).

Who We Are:

We are a dynamic team at Trace Detection Laboratory (http://tdlab.nl/) dedicated to tackling real-world challenges. Our research focuses on **detecting trace gas species**, developing **novel laser-based absorption spectroscopy instruments**, and using a strong analytical infrastructure of **mass spectrometry-based techniques**. Applications include **pollution monitoring, biomedical diagnostics, agri-food industry, and emission/exposure measurements**.

Projects Overview:

- **Absorption spectroscopy** with broadband laser-based IR sources or **PICs** enables highly sensitive gas concentration measurements.
- Our **high-power intrapulse difference frequency generation (IDFG)** sources cover the mid-infrared range (2–11.5 µm), providing unprecedented spectral coverage for a wide variety of molecular species (DOI:10.1364/oe.515914)..
- **Coherent open-path spectroscopy (COPS)** allows field deployment without gas cells, guiding light across outdoor paths for direct interaction with the target area (DOI:10.1016/j.ese.2025.100554).
- Projects involve **field deployment** of **PICs** and **broadband lasers**-based spectroscopic systems in environmental, agricultural, livestock, and occupational health applications.

Research Areas/Available Positions

1. **Development of robust COPS systems for field deployment**
    - Environmental monitoring: air pollution around airport and residential areas, combined with satellite data
    - Livestock applications: monitoring air quality inside and outside barns.
2. **Development of ultrabroadband laser systems**
    - Indoor and workplace air-quality monitoring to map personal exposure
    - Pathway toward imaging Fourier-transform spectrometry.
3. **Development prototype gas-sensing devices**
    - Hands-on integration of PICs**,** optical components and detectors
    - Test performance in real-world applications.

Positions: We offer multiple postdoctoral positions (typically of 2 years with the possibility of extension and potentially more than one position per topic).

Your tasks:

- Bring expertise and network in optical gas sensing
- Develop field-deployable spectrometers
- Coordinate and conduct measurement campaigns

- Analyze acquired data sets
- Collaborate with internal teams and external partners
- Contribute to publications and dissemination

Skills Required:

- PhD in **physics or engineering**, preferably in optical gas sensing
- Solid background in experimental **optics, laser spectroscopy, and signal-processing**
- Experience in **data analysis** and programming (Matlab, LabView and/or Python)
- Ability to work **independently** and in a **multidisciplinary team** and supervise students
- Team player with initiative and responsibility for the team's success
- Excellent English communication skills.

What We Offer

- Immediate start possible.
- Opportunities to work on **state-of-the-art technology in IR spectroscopy and photonics**.
- **Collaborative, interdisciplinary environment**.

How to Apply

Please submit your **CV and a letter of motivation** via email to: simona.cristescu@ru.nl.

For more information, visit our website: http://tdlab.nl/

Apply now! Positions remain open until filled.