



GREENER

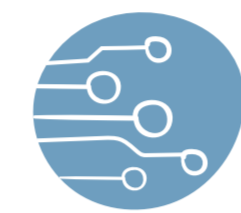
Single photon source and detector based on novel materials for the detection of endocrine disruptors

Project

GREENER aims to help water monitoring with new compact spectrometer technology that can measure extremely low concentrations of **contaminants in water**, including hormones that remains a major problem worldwide, posing a significant **health risk to humans and animals**.

This marks the **first time that an electrically pumped, quantum dot based single photon source, which operates at room temperature, has been applied to spectral sensing**, taking advantage of the significant noise reduction provided by the spectrometer system including intelligent data processing and AI algorithms, thus enabling a low-noise detection method.

Objectives



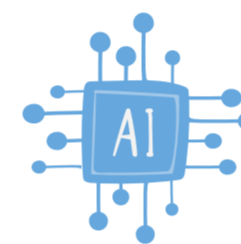
Development of new, environmentally friendly quantum dots (QDs) capable of emission at wavelengths up to 2 μm



Optimization of DNA origami based heterogeneous integration technology on wafer level for singulation of QDs



Development of electrically driven QD based single photon source and detector for noise-reduced absorption measurement



Development of a suitable AI-assisted data processing



Validation of the optical device for the absorption measurement of relevant hormone concentrations in water

Impacts

The resulting biosensor will be evaluated for the **detection of critical (endocrine disrupting) contaminants in water in fisheries and aquaponics**.

The GREENER project's innovative technology will revolutionize the **water monitoring industry**, providing an **environmentally friendly and cost-effective solution** that can be used by anyone to monitor water safety and quality.

The innovative use of quantum technology in spectral sensing marks a significant step forward in the field of water monitoring and significantly to protecting our **natural resources** and improving public health.

Partners



Project details

Grant Agreement Number: 101091980

Project Full Title: Single photon source and detector based on novel materials for the detection of endocrine disruptors

Project Acronym: GREENER

Topic: HORIZON-CL4-2022-RESILIENCE-01-10

Type of action: HORIZON-RIA

Granting authority: HADEA

Start date: 01 January 2023

Duration: 36 months

EU Contribution: 3.759.104,00 Euro

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More Info



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