



RADICAL

European Innovation Council Climate and Environment Portfolio: Robotics & Environmental Intelligence

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University College Cork



The RADICAL project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement number 899282.



RADICAL (899282)

An electronic sensor to detect atmospheric radicals

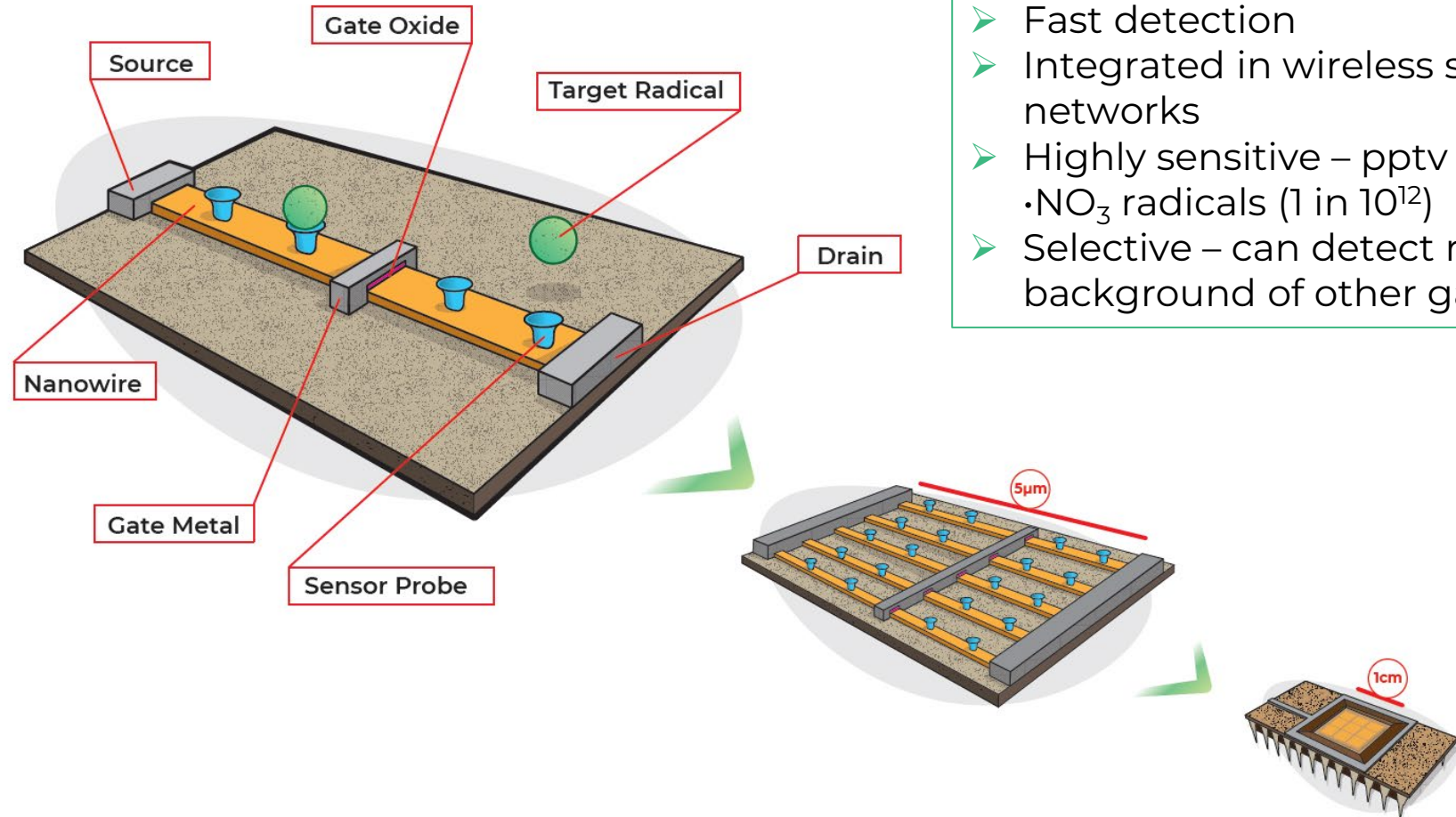
- H2020 FET Open / EIC Pathfinder project
- 6 beneficiaries, coordinated by University College Cork in Ireland
- Timeline: 1 Nov 2020 – 31 Oct 2024
- Start TRL: 1-2
- Expected end TRL: 4



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An electronic sensor to detect atmospheric radicals

FUTURE RADICAL SENSOR



- Low cost – Si nanowire platform
- Fast detection
- Integrated in wireless sensor networks
- Highly sensitive – pptv for $\cdot\text{OH}$ and $\cdot\text{NO}_3$ radicals (1 in 10^{12})
- Selective – can detect radicals in a background of other gases

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An electronic sensor to detect atmospheric radicals

CHALLENGES OF DETECTING RADICALS & OTHER SHORT-LIVED GASES

NOW

- Detecting radicals is complex, cumbersome and expensive
- Low mixing ratios (pptv)
- Short lifetime (1 s for $\bullet\text{OH}$)
- Surface losses during sampling
- Only a few labs worldwide can detect radicals

FUTURE

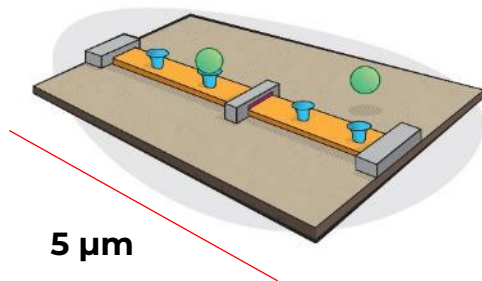
- Breakthrough way of detecting radicals & other gases:
 - Smart electronic sensors
 - Easy to use and cheap to produce
 - Potential for global deployment



1.5 m



Future



5 μm

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FET Open / EIC Pathfinder
2020 – 2024

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www.radical-air.eu



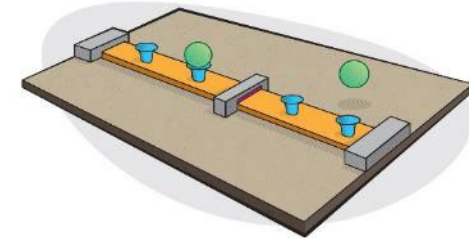
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- SCIENTIFIC NEEDS:
 - Sensor calibration - bridge the gap between lab studies and field measurements
- BUSINESS NEEDS:
 - Better understanding of the market needs and competitors
 - Funding towards commissioning an external feasibility or market study
 - Business plan development
- PARTNERSHIP NEEDS:
 - Partnerships for future funding bids
 - Collaborations with air sensor companies and research groups to prototype and test the sensor
- POLICY NEEDS:
 - Greater regulatory emphasis on monitoring short-lived, highly reactive air pollutants such as radicals and VOCs for better human health



- Want to know more?
- Interested in collaborating?
- Interested in the technology?

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