

SiCOI

SiC On Insulator

*Program on first waveguides of SiCOI for quantum applications and photonics
SiCOI platform (new Lab process), Quantum Technologies by means of hosting adequate SiC color centers*

Product description & Innovation

A novel manufacturing technique has emerged to produce SiCOI semiconductors. The top SiC layer is thin enough for waveguides in the framework of photonic integrated circuits. Color centers of the SiC are then also implemented, as accessible quantum objects by the photonics.

The system will enable fully integrated access of single-photon sources, as well as electron spin qubits, also relying on manufacturing standards rather close to the SOI state-of-the-art.

SiCOI technology from ICube Labs fulfills these main functions:

- Expected excellent quantum coherence
- Expected improved device-level optical losses
- Versatile quantum tech. applications (between single-photon source and electron spin qubit)
- Quantum memory / telecoms enable scalable quantum computing by small modular QPUs
- In-line / On chip SiC nonlinear optics (NIR, Vis, UV, harmonics, etc.)
- Microelectronics grade 4H-SiC and large-scale manufacturing processes

Air	(n=1)
SiC	(n=2,6)
SiO ₂	(n=1,45)
Si	(n=3,6)

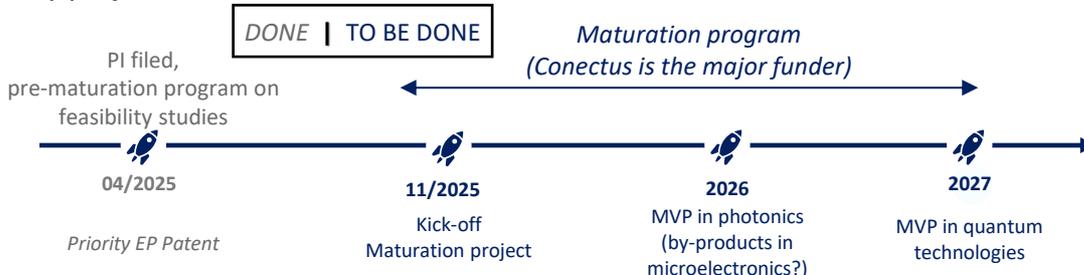


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Main range of applications:

- Quantum sensors (likewise to diamond NV centers ones)
- Quantum light source (**single-photon source OR source of correlated photon pairs**)
- Quantum memory, accessible by Photonics
- Quantum computers (**electron qubit**, encoding also possible on neighboring nuclear spins)
- Quantum telecoms, and efficient classical telecom on chip by wavelength multiplexing (for AI)
- Other applications include Photonic Integrated Circuits,
- as well as non-linear optics (integrated or not)

Key project milestones



SECTOR

QUANTUM TECHS / PHOTONICS

FIELD OF ACTIVITY

spin qubit; single-photon source; quantum sensor; photonic integrated circuit; integrated optical circuit; cavity; waveguide.

TEAM/YOUR KEY PARTNERS

Dr. Jérôme TRIBOLLET

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ICube Labs., University of Strasbourg–INSA–CNRS:

- MATISEN team – Materials for information technology, sensing and energy conversion
- IPP team – Photonics instrumentation and processes
- C³Fab Lab excellence platform

Université de Strasbourg

INSA
STRASBOURG



IP STATUS

Priority EP Patent: Apr'25

Upcoming and expected:

- PCT filing: Apr'26
- Publication date: Oct'27
- National phases: Oct'28

STAGE OF PROGRESS

Microelectronics' process chain design, and feasibility of SiCOI waveguides with color centers

→ Co-development with industrial partners

→ Use cases applications

CONTACT

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We offer an exclusive licensing option agreement including

- Joint development
- Right of first refusal
- IP managed by Conectus in accordance with licensee strategy
- Commercial use on defined fields/applications and territories

We expect a co-development effort including

- A technical support to reach the development target: successful minimum viable products (MVP)
- Financial compensation (to be defined together) deductible from future licensee fees