

QSENSATO – Integrated Atomic Quantum Sensors

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Abstract: QSENSATO develops and markets atomic-photonic chips for quantum sensing and metrology applications. By leveraging patented integrated laser-written vapor cells (LWVCs) the company aims to enable atomic quantum sensors with unparalleled robustness, precision and size reduction.

QSENSATO s.r.l. is an Italian innovative startup focused on developing and commercializing integrated vapor cells and atomic sensors for the quantum sensing market. With a patented technology based on laser-written vapor cells (LWVCs) and their integration with photonic structures, the company aims to deliver unparalleled precision and size reduction in its products for industries requiring enhanced robustness and durability, such as space, defense, remote sensing, automotive as well as biomedical and lab-on-chip applications. QSENSATO's technology is based on collaborative research conducted between the Atomic Quantum Optics group led by ICREA Professor at ICFO Dr. Morgan Mitchell and the section of the CNR-IFN led by Dr. Roberto Osellame in Milan. The company will exploit the technology of laser-written vapor cells (LWVCs) thanks to a EU patent, extended to US and China, licensed by ICFO, CNR and PoliMi in December 2024.

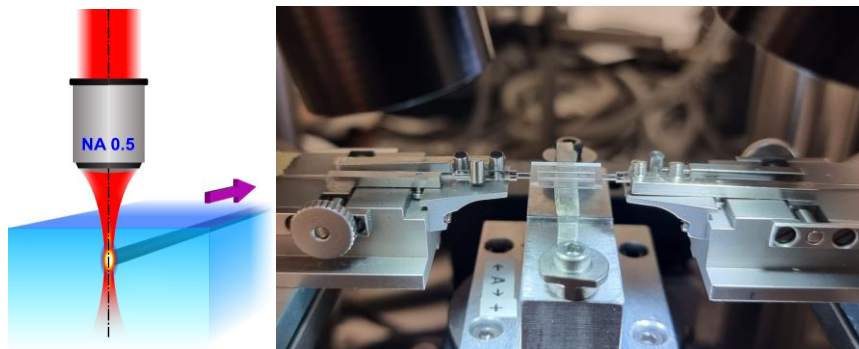


Fig. 1 Patented technology relies on the integration of femtosecond laser written vapor cells (LWVCs) and photonic structures in transparent materials, i.e. atomic-photonic chips

The startup was launched in May 2024 by Dr. Vito Giovanni Lucivero (CEO & Founder), Dr.ssa Annalisa Volpe (Head of processing and microfluidics & Co-founder) and Dr. Domenico Tulli (Tech advisor & Co-founder). Other team members are Dr. Vincenzo Mazzilli (Mazzilli&Partners) and Avv. Sabino Sernia (studio OnLex), administrative/financial and legal advisors, respectively. Thanks to a secured pre-seed fund of 500 kEUR the company will boost the rapid prototyping of laser-written vapor cells and integrated atomic-photonic chips. Despite its recent constitution, the startup has already received the second prize at the Start Cup Puglia 2024, a mention of the Jury from Studio Torta (IP) at the final of Talents GI Startup Program in Capri, including an interview for Forbes Italia, and it has been among the finalists of the National Innovation Prize (PNI) at the University of Tor Vergata (Rome) in December 2024.

QSENSATO is an academic spinoff accredited by the University of Bari Aldo Moro, and aims at the tech transfer of the research activities of Dr. Vito Giovanni Lucivero (AQuTech group) and of those conducted in laser processing and microfluidics by Dr.ssa Annalisa Volpe. These activities are framed both within NQSTI and in the departmental excellence project QUASIMODO: "Quantum Sensing and Modeling for One Health".

Example References

- [1] V. G. Lucivero, A. Zaroni, G. Corrielli, R. Osellame, and M. W. Mitchell, " An atomic vapor cell, an integrated atomic/photonic device and apparatus comprising the atomic vapor cell, and a method for fabricating an atomic vapor cell " European Patent EP4231032A1
- [2] V. G. Lucivero, A. Zaroni, G. Corrielli, R. Osellame, and M. W. Mitchell, "Laser-written vapor cells for chip-scale atomic sensing and spectroscopy," Opt. Express **30**, 27149-27163 (2022).