

Bringing photonic quantum-enhanced sensors to the next level of integration and usability: the QUANTIFY project

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Over the years sensors expanded their field of use from scientific exploration to consumer electronics, and their market evolved accordingly. Quantum technologies are expected to further push sensor's performances, unlocking even more application domains, exploiting non-classical correlation of light and matter to extract the relevant information beyond the limit dictated by classical noise processes, improving performances such as sensitivity, specificity and uncertainty. The ability to produce, control and measure quantum states in transportable devices is the key to extend the sensors' operating environment, lifetime, power consumption and costs. The objective of the QUANTIFY project (founded by the European Union, within the Horizon Europe program) consists in developing the essential building blocks and novel quantum-enhanced techniques for future chip scale optical clocks, optically pumped magnetometers and optomechanical temperature sensors.