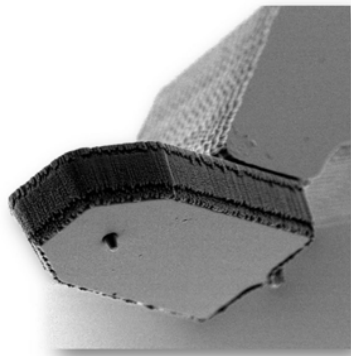


QUANTUM SENSOR TIPS

Our quantum sensor tips are an all-in-one scanning quantum sensor solution. The sensor chip contains a high-quality diamond tip with a single embedded NV center mounted on a robust ceramic carrier plate. An integrated force-feedback sensor provides safe distance control. Each sensor chip is delivered fully assembled and characterized, ready for use in your experiment.

At a glance

- Simple plug-and-play sensor chip
- Diamond probe tip etched from high quality, single crystal diamond
- Highest count rate and contrast
- Piezoelectric control of z-distance via quartz tuning fork
- Compatible with [attoAFM/CFM microscope](#) and [Akiyama probe](#) footprint



Key specifications

Each tip is rigorously characterized and is delivered with a test certificate, providing you with the NV performance and orientation. Key specifications include :

Contrast	Better than 15/20/25%
Count rate at maximum contrast (0.75 NA)	100–700 kC/s
Saturation count rate (0.75 NA)	0.3–1.2 MC/s
Nominal depth of NV center	10 nm
Hyperfine splitting visible	On request
NV vector orientation	$\langle 111 \rangle$ (100-cut diamond)

Technology

The **QZabre** quantum sensor is a unique probe that enables researchers to perform NV magnetometry experiments without going through the difficulties of probe assembly and tip fabrication. The product is the result of several years of dedicated research and development:

Single crystal diamond tips – Our diamond tips are manufactured from single crystal diamond plates by a series of optimized lithography and etching steps. Single nitrogen vacancy centers are introduced at ~10 nm from the apex by shallow ion implantation (nitrogen-15 isotope). Highest quality CVD diamond is used as the starting material to enable long intrinsic dephasing and coherence times. The tips are between 0.8 and 3 μm high with an end diameter between 150–350 nm. The tip shape is optimized to enable saturation photon count rates between 0.3–1.2 MC/s.

Plug-and-play carrier chip – For easy handling, diamond probe tips are integrated on a plug-and-play sensor chip. Each sensor chip consists of a ceramic carrier, a tuning fork distance sensor and the diamond tip. A minimal carrier thickness ensures that the sensor can be mounted in microscopes where vertical space is tight. Dimensions and contact feedlines on the ceramic chip carrier are compatible with the [Akiyama probe](#) footprint. The entire sensor chip is vacuum and cryo-compatible.

Convenient AFM distance sensor – QZabre's sensor chips integrate a force-feedback sensor based on a quartz tuning fork. The tuning fork distance sensor allows for a safe approach of the surface and a controlled navigation of the probe over the sample using a standard atomic force microscopy (AFM) controller. A proprietary chip assembly technique is used to minimize the tip standoff and achieve NV-to-surface separations below 50 nm. We can mount the tuning fork in different configurations to meet your system requirements.