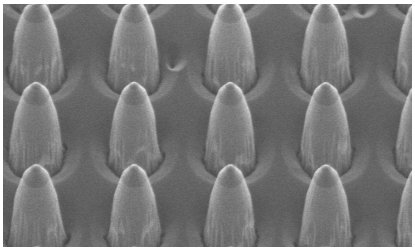
Pillar Arrays

Single NV arrays with enhanced optical outcoupling

Make your single NV experiments **easy** and **fast** with our NV arrays. These consist of a diamond membrane with arrays of outcoupling structures mounted on a sapphire chip for easy handling. These structures are shaped to **enhance** the **collection efficiency** by more than 10x compared to bulk diamond, significantly increasing the signal-to-noise.



Enhanced emission

We significantly enhance the brightness of the single NVs by placing them in an approximately parabolic shape structure. Not only does this increase the saturation count rate into the MCts/s range, it also makes it easy to localize and adress the NVs. Whether for sensing, as a single photon source, or for quantum computing experiments, a more than 10x increase in brightness will significantly improve your experiment.

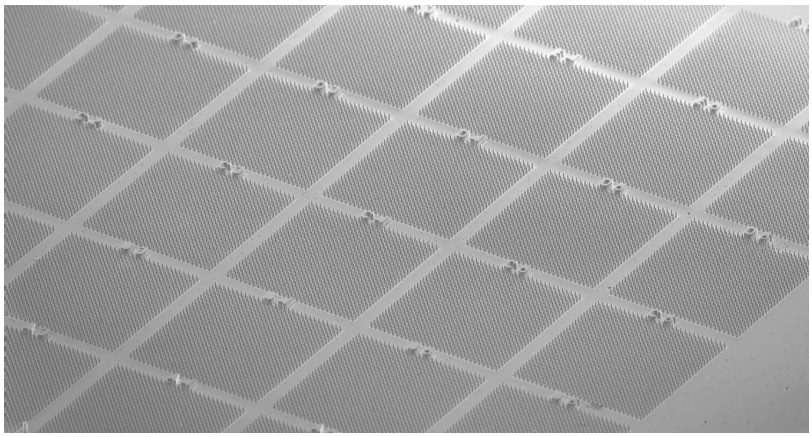
Product description

Our NV array chips consist of a diamond membrane with 36 arrays of 200 by 200 NV sites, mounted on a saphirre chip for easy handling. You can expect about 30% of sites to have a single NV and about 5% to have a high perfoming one. To help you get started, we precharacterize NV arrays and provide you with a map of NV sites and their performance.

Coherence times significantly depend on the NV depth, where deeper is better. We offer two different depths:

- **Shallow:** target depth is 8 nm, for surface sensing applications, such as NMR.
- **Medium:** target depth is 50(100) nm for applications such as single photon sources, magnetic field sensing and quantum computing.

Get in touch with us for specific request, such as surface annealing, additional characterization, isotopically pure material or higher C^{13} content.



Technical specifications

Number of single Nitrogen Vacancy centers	~100'000
Typical contrast (10 MHz, linewidth cw- ODMR)	15 - 25%
Typical saturation countrate (650 nm longpass, Mitutoyo 50x HR NA 0.75 objective)	1 MCts/s
NV depth (shallow/deep)	
Coherence time T_2 (single pulse Hahn Echo) (shallow/deep)	3 / x µs
Dephasing time T_2* (x-y sequence) (shallow/deep)	3 / x µs