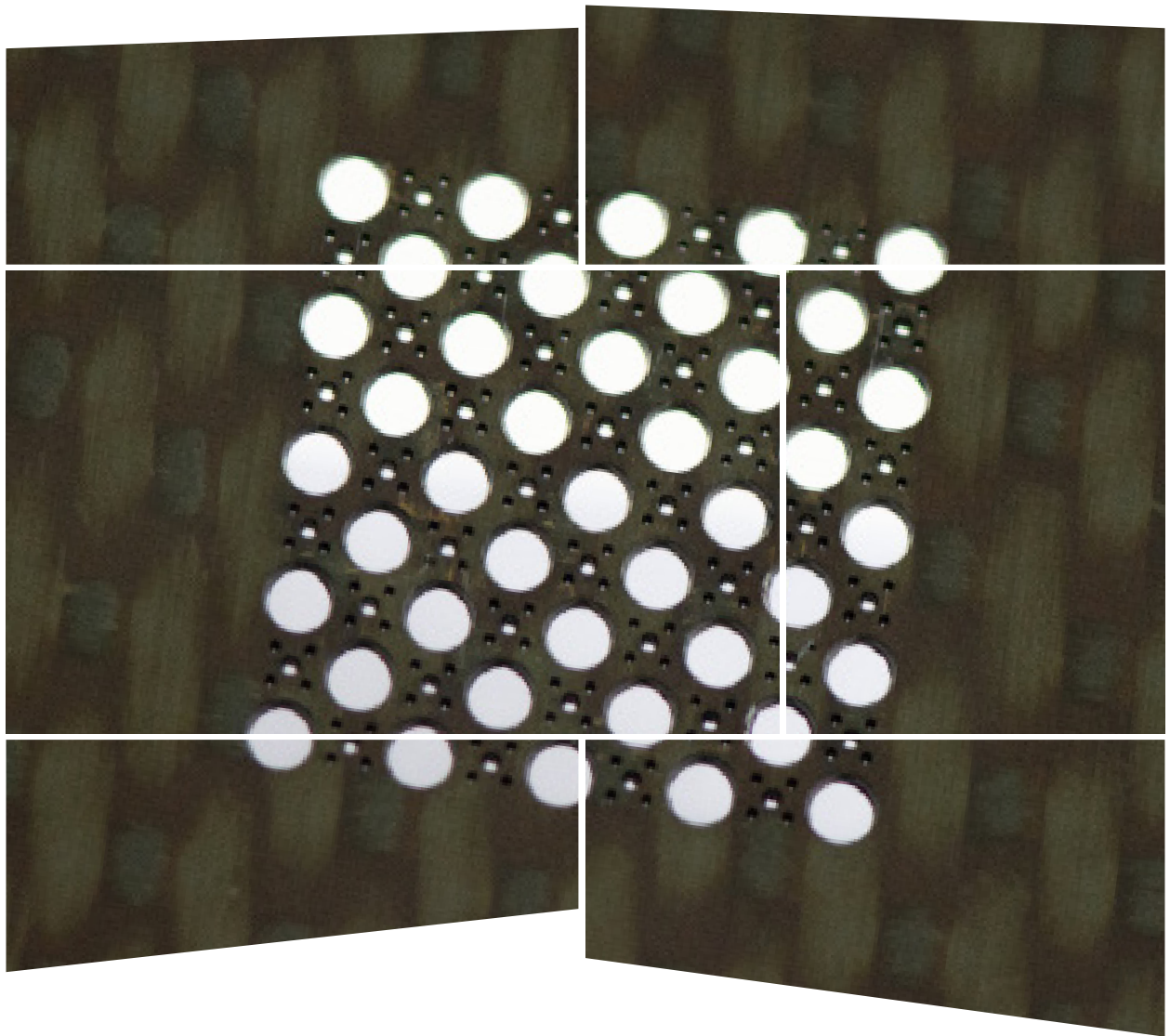


Laser drilling

Creation of holes with variable shape and large aspect ratio



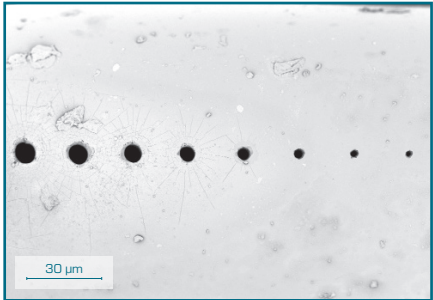
ALPhA **NOV**

Optics & Lasers Technology Center

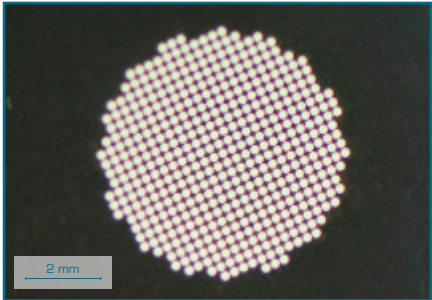
Laser drilling

Creation of holes with variable shape and large aspect ratio

Laser drilling makes it possible to create through or blind holes with variable shape and high aspect ratio, on all types of materials and thicknesses.



Optical fiber polymer clad drilling



Composite material drilling



Stainless steel drilling - cross section



BENEFITS

- Diameter <math><10 \mu\text{m}</math>
- Adaptable shape
- Aspect ratio >math>15</math>
- Drilling transparent materials
- Cylindrical drilling



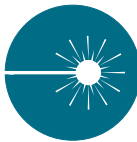
PERFORMANCE

- Tolerances of a few μm
- Accuracy of a few μm
- Depth and geometry control



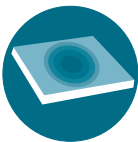
THROUGHPUT

- Dependant on material thickness
- From ms to s per hole



LASER WORKSTATION

- Pulse duration from fs to ms
- Trepanning head
- Drilling head
- Scanning systems
- Wavelength from IR to UV



SURFACE CONDITION

Roughness of a few hundreds of nm on the hole inner surface



AREAS OF APPLICATION

- Aeronautics
- Automobile
- Electronics
- Diamond spinneret manufacturing
- Watchmaking
- Medical
- Optics