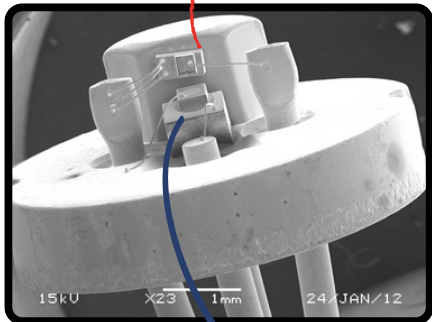


# Telecom

Over the years, telecom has been Mintres' most important application area.

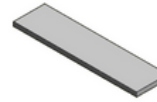
Submount for laser diode made by Mintres



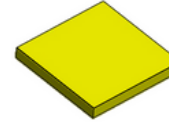
Submount for photo diode made by Mintres



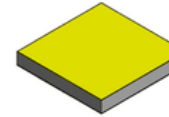
Simple heatsinks without coating



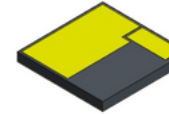
Simple heatsinks, coated 4-sides or 6-sides, for good top to bottom electrical conduction.



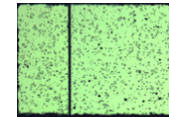
WaSP-0 heatsinks, coated at the top and bottom only, ensuring top to bottom electrical insulation



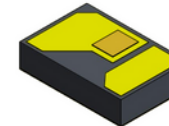
WaSP-1 heatsinks, coated top and bottom side, with a top side metal pattern



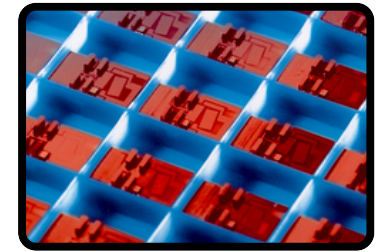
WaSP-1,5 heatsinks, coated top and bottom side, with a patterned AuSn pad at the top surface



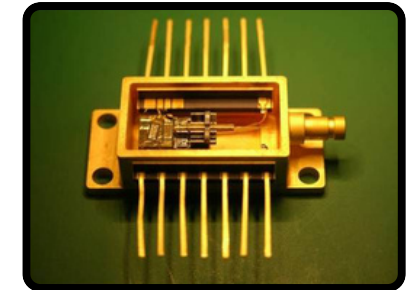
WaSP-2 heatsinks, coated top and bottom side, with two levels of metallization



PD submounts, metallized at the top surface, bottom and side, with a groove at the side for electrical insulation



AIN assembly for source laser for telecommunication, with a base plate of AIN and a kovar metal piece soldered to the base plate by means of AuGe solder, and a thermistor soldered to the patterned AIN by means of AuSn solder.



Butterfly package used for telecom transmissions, this part is made by our customers.



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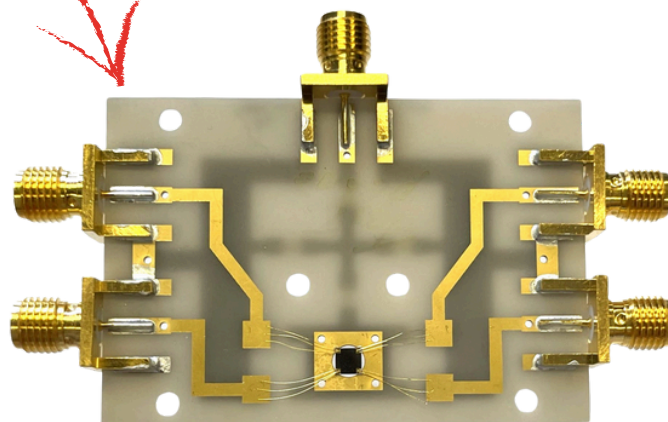
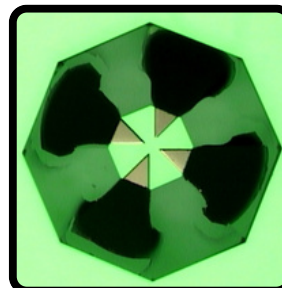
# Scientific

Scientific can be quite a diverse market segment. Different types of research companies and institutes can be classified under scientific. Different products Mintres offers for this segment are:

- Detectors (Gas, Beam, Oil)
- Heat spreaders
- Windows
- Very thin diamond parts
- Anvils with metal contacts
- Coating service
- Laser service
- Assembly

The scientific application is mostly done with CVD diamond material.

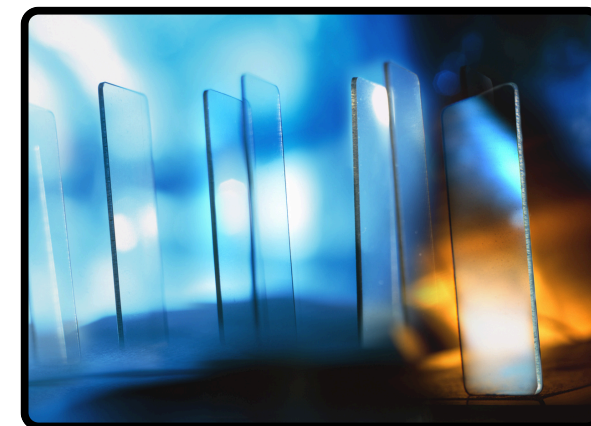
Mintres mainly has experience with the high power synchrotron community, high pressure material science, IR spectroscopy and electrochemistry.



# Optical

Optical used to be a fairly well presented part of the Mintres catalog, but in the past year it has decreased.

Work in the optical field is almost always a service.



Bare optical windows



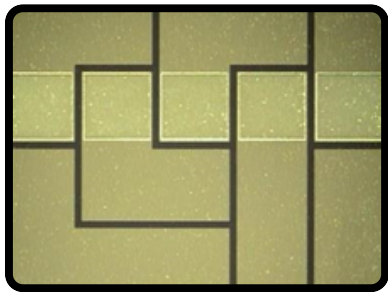
# LED

Light emitting diodes (LED's) have always been a substantial part of Mintres' sales, but in 2024 they are expected to be close to gone.

The main material used in LED applications by Mintres is CVD diamond. Due to the high price of diamond, it is only applicable for high brightness LED.

The main product types are:

- Heat spreaders for a single LED
- Heat spreaders for a group of LED's



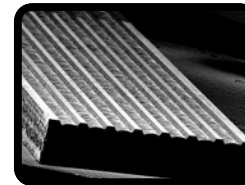
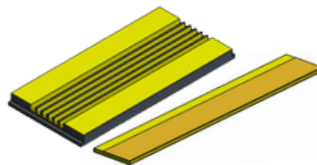
Heat spreader for a group of LED's

# LDA

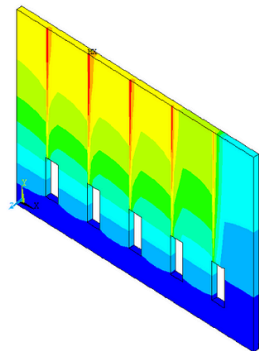
Laser diode array comprises a number of laser bars, wherein each laser bar has a number of emitters generating laser beams. They have a much better size, weight and power efficiency ratio, which helps them achieve a much higher peak power and brightness when compared to single emitters.

LDA products made by Mintres:

- LDA simulators
- Heat spreaders
- Submounts



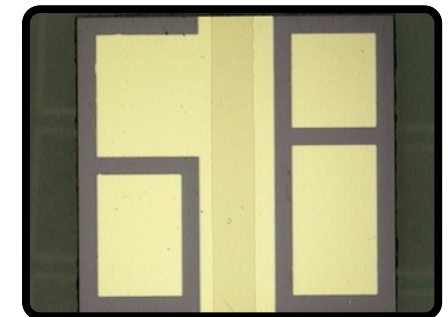
ANSYS 6.1  
OCT 29 2002  
11:28:10  
PLOT NO. 1  
NODAL SOLUTION  
STEP = 1  
SUB = 1  
TIME = 1  
TEMP  
TEPC=54.404  
SMN = 2-  
SMX = 24.751



# HPLD

In HPLD, short for High Power Laser Diodes, Mintres is mainly a supplier of heatsinks or heat spreaders.

Both CVD diamond and AlN are materials often used as a substrate for this segment.



Diamond heat spreader made for laser diodes.

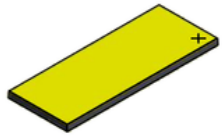


# RF

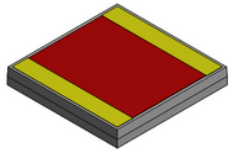
For Mintres there are 2 areas of interest when looking at RF.

The first one is high power transistors for communication. Diamond can be used as a heatsink to help with the high power as well as the robustness of the device.

Diamond can also be used as a base for thin film resistors.



Heatspreader for RF transistors with electrical insulation top to bottom



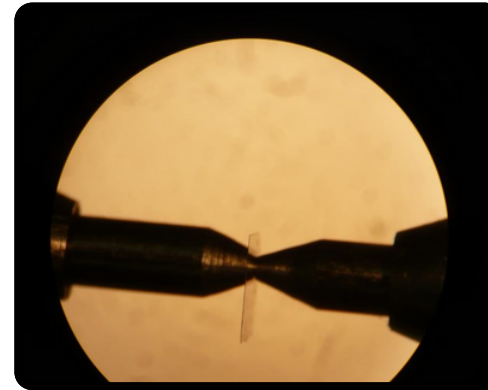
Diamond with TaN thin film resistor



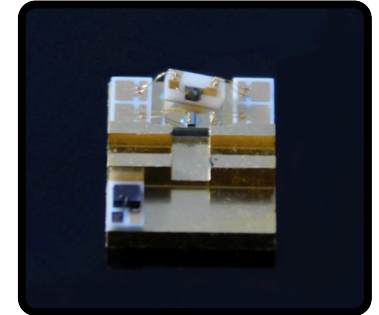
# Others



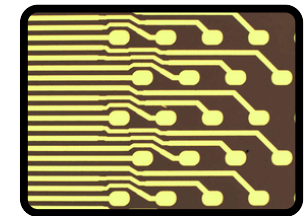
A diamond RTD temperature sensor with patterned metallization for a rapid response time



Diamond part polished to 10  $\mu\text{m}$



Telecom source laser package with a number of parts made by Mintres



Diamond heat spreader with a fine pattern and a 4.5  $\mu\text{m}$  thick Au layer



Diamond blades



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