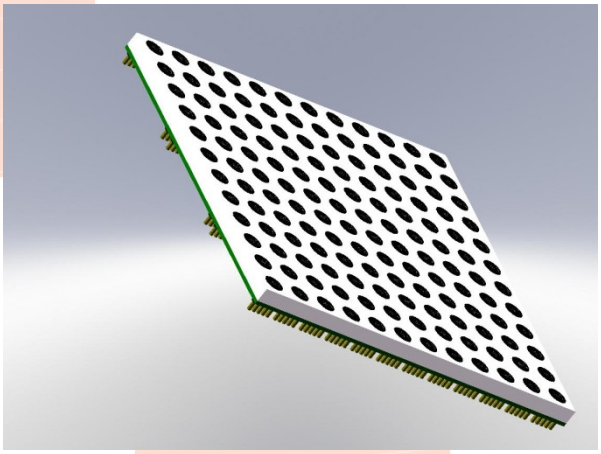
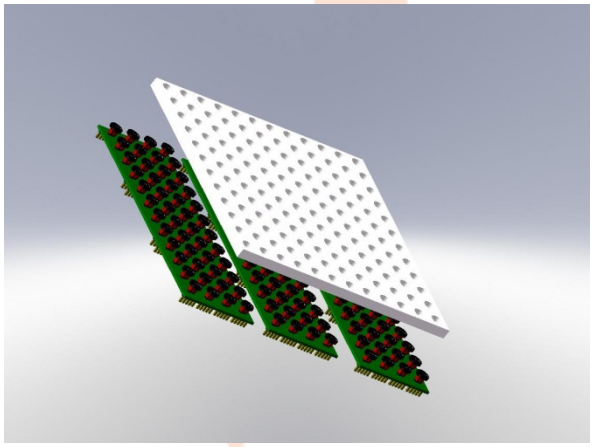
Diamond Detectors Ltd

Real Time
High Purity Single Crystal
Diamond Detectors Array Modules 4 to 144 Elements





HIGH purity synthetic CVD Diamond presents unique characteristics that make it an excellent material for radiation detection. Diamond can detect any kind of radiation that is more energetic than its bandgap of 5.5 eV, e.g., deep UV photons, X-rays, gamma rays, charged particles and neutrons with a dynamic range in energies spanning from 5.5 eV up to GeV of cosmic rays. Because of its radiation hardness it needs no frequent replacements, its high mobility for both electrons and holes , equates into a very fast response (rise time < 100 ps), it can be operated at room temperature with no need for cooling, it has a resistivity several orders of magnitude greater than silicon, an extremely low leakage current and a thermal conductivity better than copper.

Characteristics of Diamond Radiation Detectors

- rise time < 100 ps
- energy resolution up to 0.4 % (5.5 MeV Alpha particle spectroscopy)
- Time of Flight (TOF) resolution up to 28 ps (1 σ for the correlation between two detector responses)
- Tissue equivalent Radiation Dosimetry (Z=6)
- Radiation Hardness (excellent thermal and mechanical properties).
- High spatial resolution.
- Homogenous (no grain boundaries).

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Technical Specifications	
Detector type	High Purity CVD Diamond Single Crystal
Detector thickness	300 micron
Transmission	N/A
Bias voltage	Typically 0.3V/micron
Die size	1x1mm
Metallization	Typically DDL proprietary metallization DLC/Pt/Au.
Package size	Array Size Specific :- Module build typically 4 to 144 Elements (96x96mm FOV)
Detection capability	Band gap 5.5ev X-ray and Charged particle therapies High Energy Physics
DDL can provide a range of custom processing options including :- thickness, lithography ,metallization and package design