PHLUXi

Ex oriente LUX

Electronics

CORE TECHNOLOGY

We have an advantage in THz-wave technology which comes from RIKEN Teraphotonics Research Team. We also have technology, knowhow and experience in light sources and their applications. Combining these technologies we are able to develop products tailored to customers needs within short deadlines.

MISSION

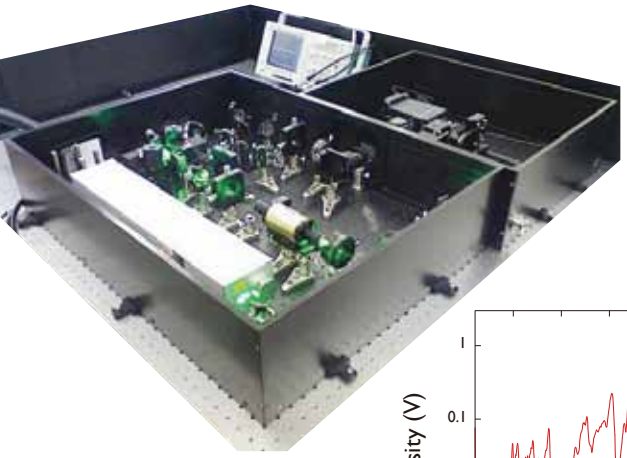
We offer

COMPANY NAME	PHLUXi, Inc. (A RIKEN authorized venture enterprise)
ADDRESS	6-6-3 MinamiYoshinari, Aoba-ku, Sendai, Miyagi 989-3204 Japan
ESTABLISHMENT	October, 2011
CAPITAL	2,000,000 JPY
REPRESENTATIVE	Yoshiharu Urata / president
DESCRIPTION OF BUSINESS	R&D, manufacture and sale of light sources between UV and THz-wave. R&D, manufacture and sale of related components, devices, instruments. Consulting services for above mentioned matter.
CONTACT	www.phluxi.com (website) sales@phluxi.com (e-mail), +81-22-719-7630 (phone)

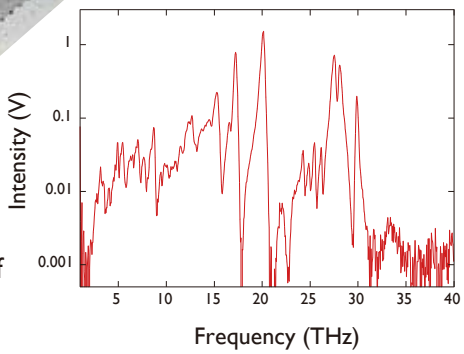
Corporate PROFILE

THz sources

Terahertz Generator using DAST-DFG



Tunable THz-wave is generated using differential frequency generation (DFG) nonlinear process in a DAST crystal relatively high frequency region. System includes an optical head, laser/DFG controller, and chiller. User can easily select/scan THz frequency through PC. Customization available on request.



Typical tunability of DAST-DFG system

Specifications (preliminary)

Frequency range	2.5~35 THz
Head Dimensions	600 x 500 x 150 (mm)
Power consumption	100V, 5A for tuning system

* Pump laser required separately.

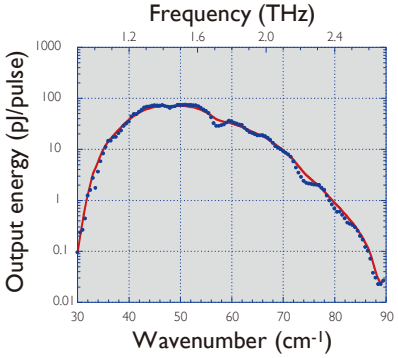
** Spec depends on pump source.

All-in-one Terahertz Parametric Oscillator (TPO)

Another selection of our THz source, TPO, generates relatively low frequency with a smooth and fast tuning from unique ring resonator. This compact system includes a THz oscillator with a fast tuning mirror, a pump source, and a handling optics in a box. All solid-state system offers a stable output.

Specifications (preliminary)

Frequency range	0.8~3THz
Head Dimensions	400 x 300 x 150 (mm)
Power consumption	100V, 20A (laser, chiller, controller)



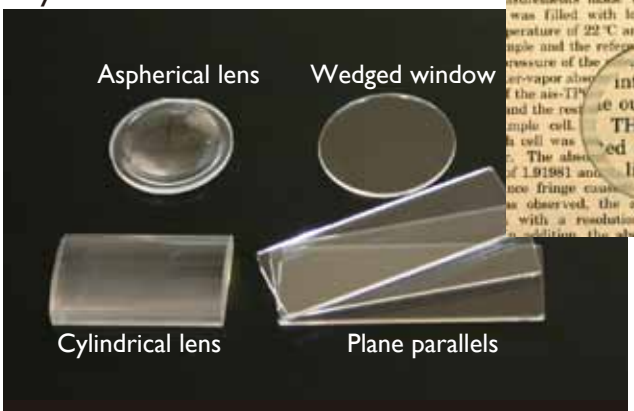
Tunability of TPO system

Passive components

Tsurupica® Optics

See separate flyer for detailed information

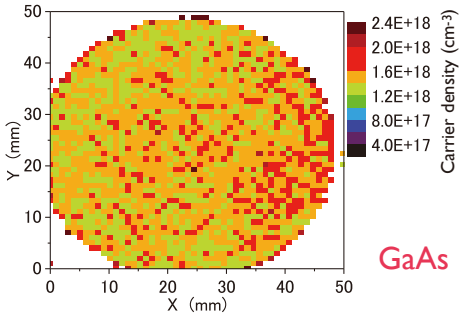
Tsurupica® is one of the best material for THz-wave applications. It is obviously advantageous compared with existing materials such as Polyethyrene and Silicon. Tsurupica shows high transmission and low loss on surface not only for THz-wave but for visible light.



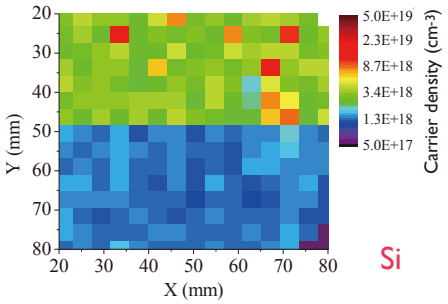
Production: PAX, Inc.

Applications

Semiconductor Inspection (Carrier density scanner)



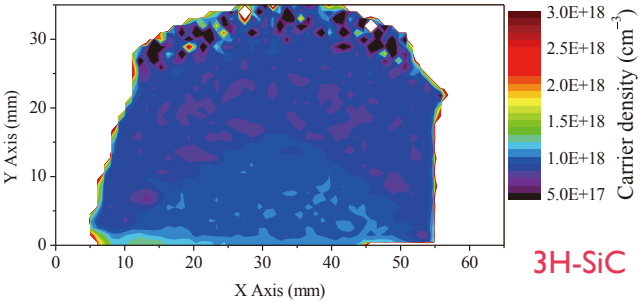
GaAs



Si

Narrow linewidth of DFG-based THz-wave souce and fast switching between on- and off-resonance frequencies enable non-destructive, high-accuracy measurement of the carrier density of semiconductor with high throughput. This technique is applicable to Si,Ge, GaAs, SiC and GaN wafer. Mesurement is done automatically with a built-in scanner and a unified controller. No vacuum environment required.

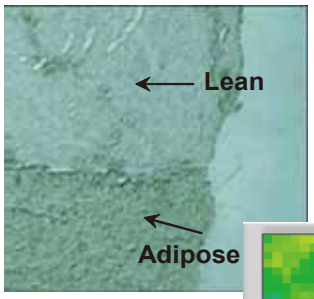
Typical carrier density map of semiconductor wafers using DAST-DFG type THz source.



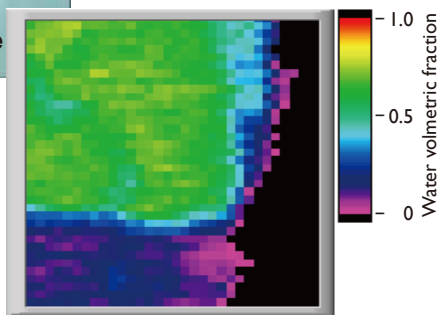
3H-SiC

System will be available from Furukawa, Inc.

Biological Monochromatic Imaging



CCD Image



THz Image (water content)

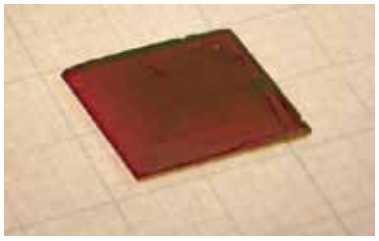
THz-wave image is closely related with the water content changes. This makes it a viable tool for water content measurement.

Tunable THz source can tune the frequency to the optimal range for the most reliable analysis. Highly reliable, high reproducible water mapping for small biological tissue can be achieved in high reliability and reproducibility without huge instruments and tremendous cost.

Organic Nonlinear Crystal for THz generation

High nonlinear optical coefficient of organic crystal enables high-efficiency conversion from lightwave to THz-wave.
DAST is well-known as the best material of generation of THz-wave due to the highest coefficient.
A new comer BNA is one of the candidates for THz-generation using around 1060 nm-laser as a pump source.

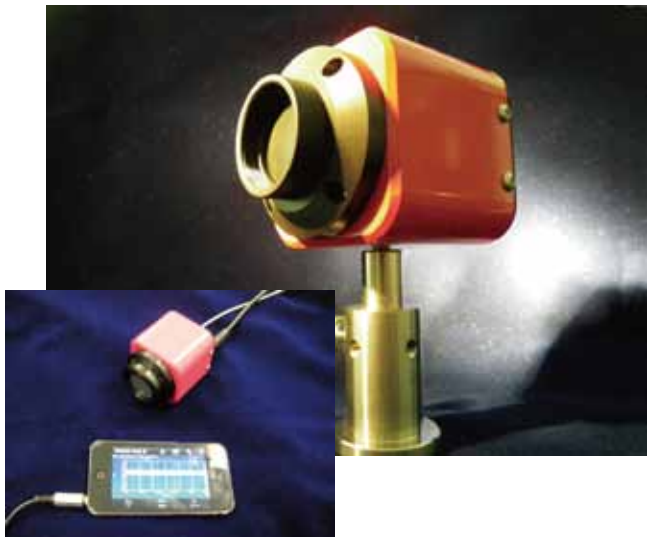
Production: Furukawa, Inc.

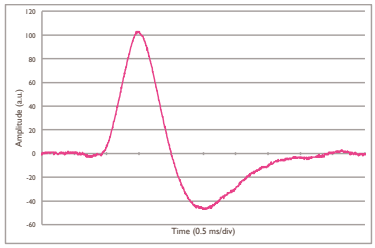


DAST

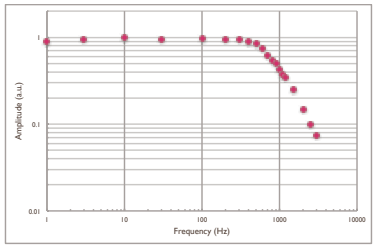
BNA

Fast Pyroelectric detector "Pyracanth"





Temporal profile
100us, 100 ns, 1064 nm



Peak output response
as a functon of pulse rep rate

Specifications (High freq. element with Standard amplifier)

Product number	PYD-1
Wavelength region	350 nm~300 um
Surface size	φ 1 mm
Frequency response	~300 Hz
Maximum pulse width	200 us
Rise time	350 us
Sensitivity[1)]	12 MV/J
Noise level[2)]	<1 nJ (energy)
Power supply	DC 3~10 V, monopolar*
Connectors: Signal Out	BNC (High impedance)
Power In	SMA
Housing dimensions[3)]	54 x 54 x 60 mm^3

1) for 1064 nm, 100 us pulse
2) for 1064 nm pulse, use battery as power supply
3) PYD-1-01 (with built-in lens)

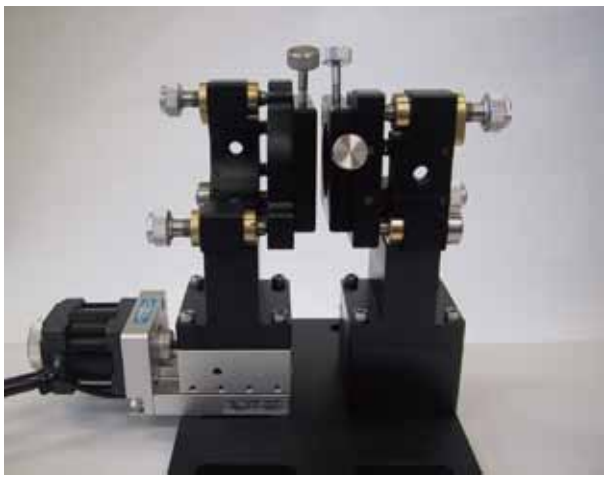
Models

Detector element: low frequency / high frequency optimized
Amplifier: low cost, battery operation (standard) / fast response, bipolar

Optional Attachments

Lens, Filter (Tsurupica, High-resistivity Si, Ge, Polyethylene...),
Iris, Shutter, Extention tube
Portable display, etc. are available as option.

THz-scanning Fabry-Perot interferometer



Specifications

Product number	TFPI-1
Measurable frequency[1)]	10~100 cm^{-1}
Free spectral range	0.8~20 cm^{-1}
Resolution[2)]	4 x 10^{-3} cm^{-1}
Metal mesh gap distance	0~12 mm
Gap distance accuracy	+ / - 5 um
Beam height	100 mm
Clear aperture	20 mm
Head dimensions	160 (L) x 120 (W) x 130 (H) mm^3
Head weight	2.5 kg

System includes; scanning head with metal mesh, stage controller, and control software.

1) User select the mesuring range 10~30cm^{-1} or 30~100cm^{-1}
* Larger aperture, longer mesh gap are available. Please contact us for more information.

Measuring Instruments

PHLUXi

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