

Can a pulsed UV laser produce translucent solar cells?

We report an application of a pulsed ultraviolet (UV) laser ($\lambda = 355 \text{ nm}$) in producing translucent Si solar cells. This process efficiently generates a densely packed microhole array on a fully fabricated Si P-N junction solar cell in just a few minutes.

What are the applications of ultraviolet lasers?

Ultraviolet lasers have applications in industry (laser engraving), medicine (dermatology, and keratectomy), chemistry (MALDI), free-air secure communications, computing (optical storage), and manufacture of integrated circuits. [citation needed]

Can laser patterning improve the development of translucent solar cells?

Advancements in laser patterning techniques in conjunction with radial P-N junction architectures could benefit the development of translucent solar cells using cost-effective solar materials (e.g., polycrystalline Si) for various BIPV applications. A pulsed UV laser ($\lambda = 355 \text{ nm}$; DPSS Laser Inc.) was used to fabricate microhole array patterns.

Can a laser generate ultraviolet light?

Even weak surface roughness or bubble content of optical components can lead to strong wavefront distortions and scattering losses. Nevertheless, there are various kinds of lasers which can directly generate ultraviolet light: There are laser diodes, normally based on gallium nitride (GaN), emitting in the near-ultraviolet region.

How does a laser generate a non-coherent UV radiation?

Lasers have been used to indirectly generate non-coherent extreme UV (E-UV) radiation at 13.5 nm for extreme ultraviolet lithography. The E-UV is not emitted by the laser, but rather by electron transitions in an extremely hot tin or xenon plasma, which is excited by an excimer laser.

How does a UV laser work?

The UV laser featured a pulse width of $\approx 20 \text{ ns}$, a pulse frequency set to 80 kHz, and an adjustable z-axis position which affects the laser spot size. The corresponding laser fluence can be calculated based on the laser power and spot size, assuming a Gaussian-shaped laser spot.

UV laser markers use ultra-violet light, typically at a 355 nm wavelength, to mark or process materials. This wavelength, about a third of the typical fibre, allows the UV laser to do things ...

Multi-functional gas cell in the vacuum ultraviolet free-electron laser beamline Mingchang Wang. 0009-0005-3540-1415 ; Mingchang Wang (Data curation, Formal analysis, ...

Laser ablation, by comparison, is a proven method for precise and high throughput formation of local contact

openings in dielectric films [4], [5], [6], and is widely ...

We presented the first, to our knowledge, demonstration of an ultraviolet (UV) laser at 223.8 nm by six-harmonic generation of an electro-optic Q-switched cavity dumping ...

In contrast to furnace-based activation, lasers can be used to achieve highly localized doping with controlled dopant concentrations, useful in advanced architectures such ...

A laser in the deep ultraviolet (DUV) range (from ca. 260 to 320 nm) has been proposed as an additional excitation source, driven by the on-going development of additional ...

MOPA laser marking color on stainless steel Conclusion (Fiber Laser VS CO2 Laser VS UV Laser VS Diode Laser VS MOPA Laser) Fiber laser marking machines are the ...

In Arcturus systems pulsed IR and UV lasers can be used. Tissue section placed on glass or membrane slide can be microdissected only by IR (e.g. for single cells) or ...

In contrast to furnace-based activation, lasers can be used to achieve highly localized doping with controlled dopant concentrations, useful in advanced architectures such as the interdigitated ...

Specifically, our scribing approach unveiled an ultra-narrow interconnection area width of 80 um using an UV nanosecond laser, laying the foundation for achieving high GFF in solar cell modules. Additionally, it ...

A summary of the effects of UV laser on skin cells is presented in Table 1. 5. Blue Light (450-495 nm) The blue light contributes to premature skin aging by inducing ...

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