

diam tec GmbH

History

Ila Year of establishment in Singapore: 2005

Technical: Ila Technologies – www.2aTechnologies.com

Gems and Jewelry Industry: GEMESIS – www.gemesis.com

Microwave Plasma CVD technology for Poly Crystalline and
Single Crystal Diamond

The Group owns ALL the technology chain from start to end

Ila Technologies, Singapore

2012: Asian headquarter

Microwave Enterprises LTD

2013: American headquarter in Morrisville, NC

Diamtec GmbH

2014: European headquarter in Pforzheim, GER

People

Ila Technologies, Singapore

Research: Prof. D.S. Misra

R&D manager: Dr. Alvarado Tarun

Application engineer: Lin Lin

Senior Business Development Manager: Peter Sim

Diamtec GmbH, Germany

Business Development / Sales: Detlef Hüffer

R&D / Blue Ocean Strategy: Dr. Juergen Schöchlin

Microwave Enterprises LTD, NC

Business Development: Dick Garard

Sales: Keith Harris

Technology

Ila Technologies runs a fully integrated technology chain

Seeds for CVD diamond growth **HPHT Technology**

X-ray Crystallographic Technology for instant and accurate crystal orientation within 3 (1) degrees accuracy

Microwave Plasma reactors for maximum efficiency

Laser cutting and diamond **polishing facilities**

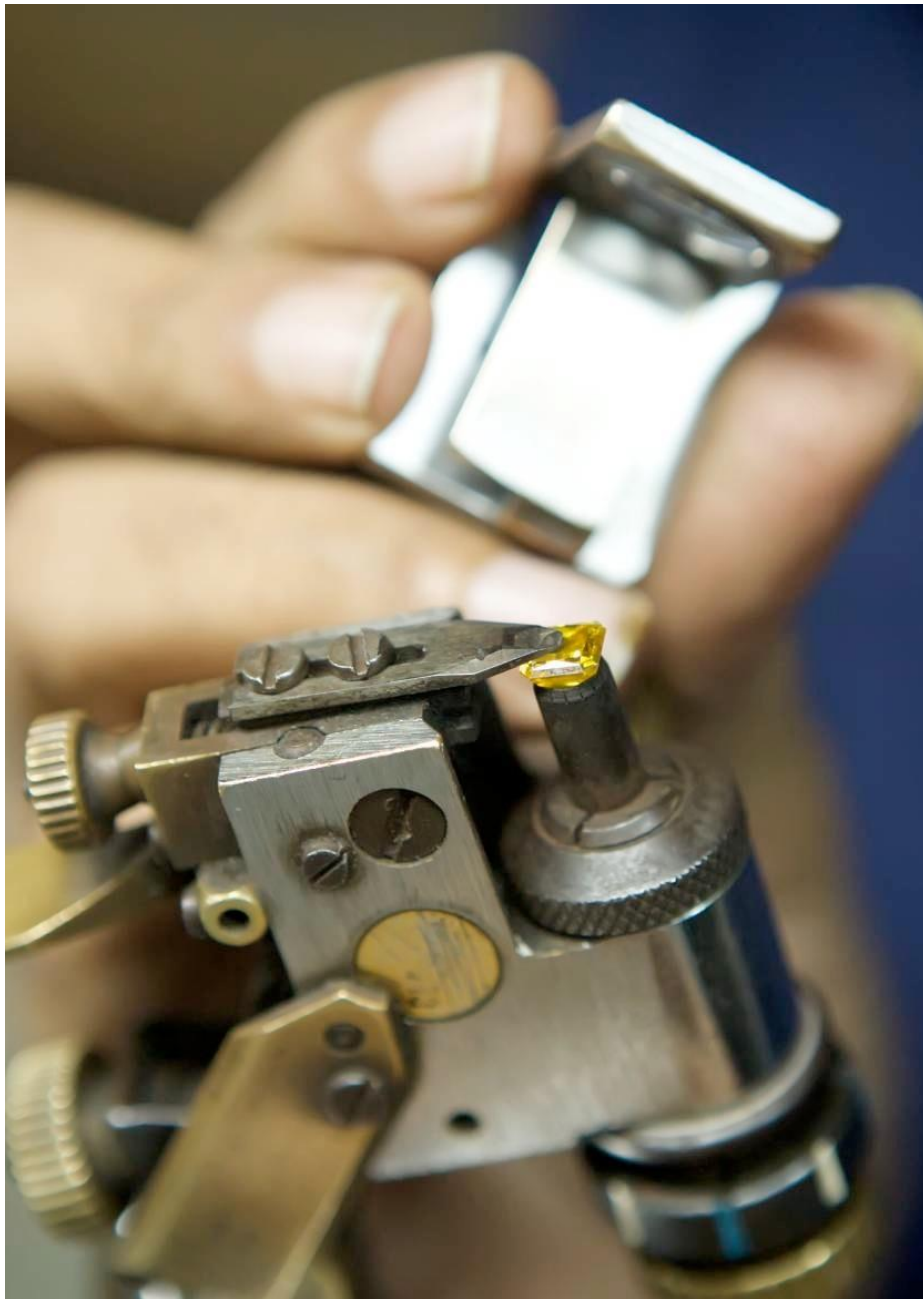
One of the world's largest facilities for both HPHT and CVD diamond growth

Size of up to 7mm x 7mm (**9mm square soon**)

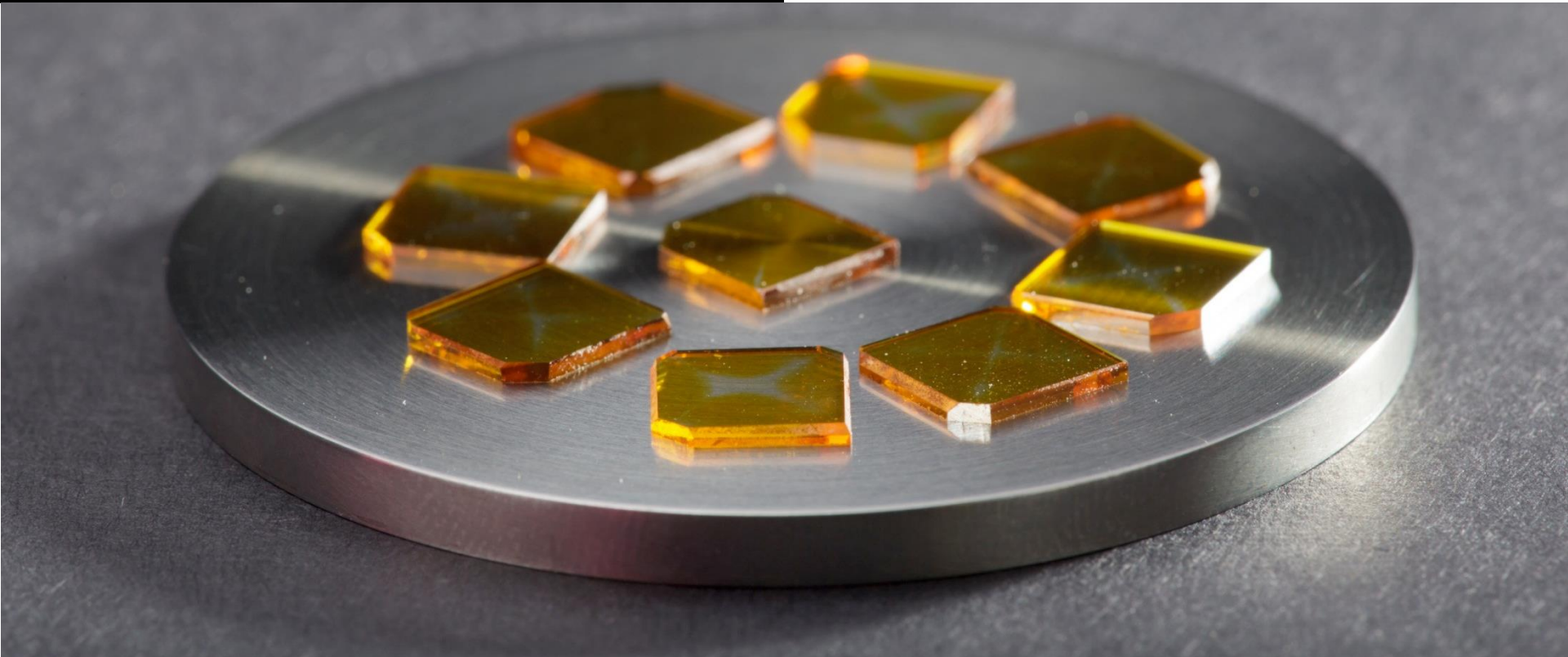
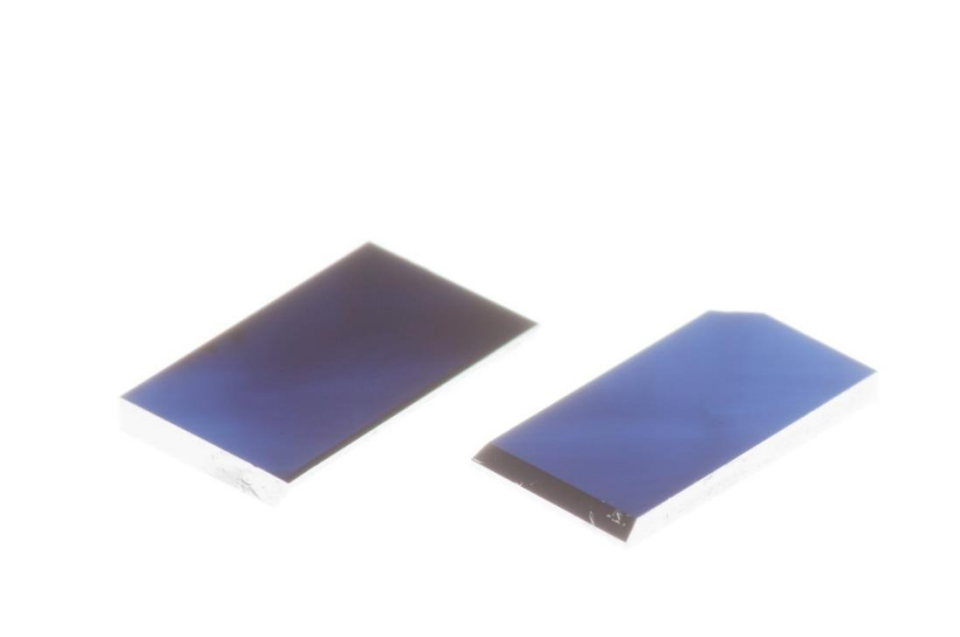
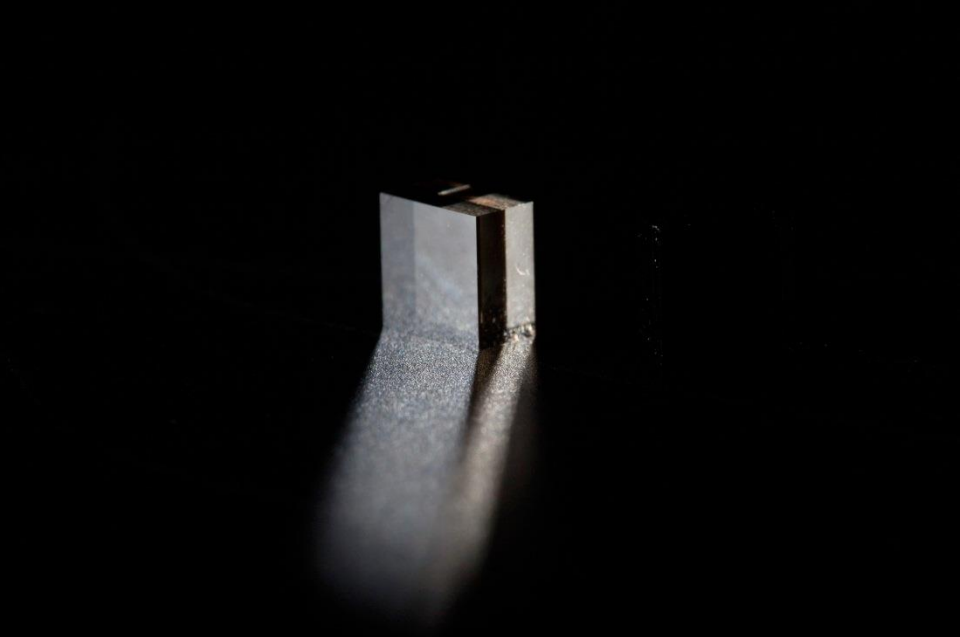
Thickness up to 4mm

<100> growth direction

<100>, <110> and <111> top/bottom oriented plates



Diamtec GmbH, Germany – the European office of Ila Technologies, Singapore



Product Characterization / Quality Control

M grade

- Microscopic inspection
- Crystal orientation (X-Ray Laue camera $< 3^\circ$, better on request)
- Birefringence / internal stress
- Fluorescence – if required (UV or RAMAN @ 514nm)

O grade (additionally)

- Optical transmission
- transparency
- N concentration $< 1\text{ppm}$

E grade (additionally)

- substitutional N concentration $< 5\text{ppb}$
- Surface polishing, surface quality – roughness/damages
- purity, uniformity
- Time stability - max electric field - leakage current

Product Characterization E grade

Dimensions and thickness	Upto 7mm×5mm×1.5 mm (+/-0.1 mm)
Surface Roughness (Ra)	< 2.5nm (both sides polished)
[N] (single substitutional)	< 1 ppb
Charge Collection Distance	
@ E = 0.2V/mm (Alpha and Beta)	Full collection
Charge Collection Efficiency	
@ E = 0.2V/mm	100 %
Carrier Lifetime (ns)	e = 21.4 +/- 5.5 ns h = 25.65 +/- 1.3 ns
Drift Mobility and velocity	e = 2000 +/-100 h = 2600 +/-30
@ 300 K (cm²/s)	
Thermal Conductivity @ 300K	>2200 Wm ⁻¹ K ⁻¹
Transmission @ 10.6um (FTIR)	> 71 %
Rocking curve width	< 40 microRadian

Products under development

I grade

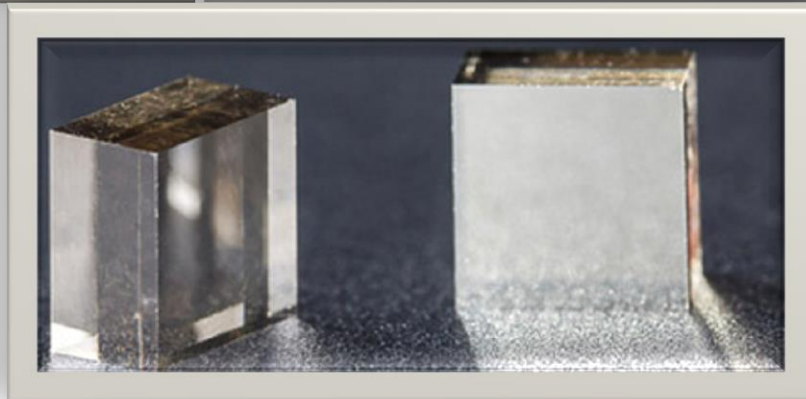
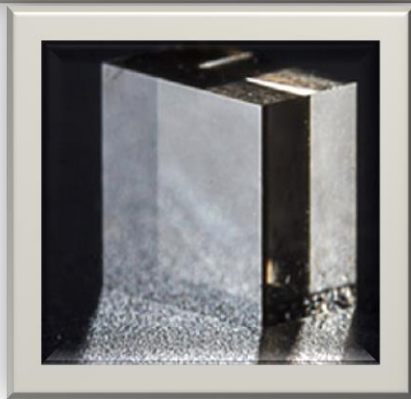
- C12 isotopic sc CVD diamond
- under development
- Requirements / Comments?

C grade

- Boron doped sc CVD diamond - about 10^{16}
- still under development
- Available next year
- Requirements / Comments?

Sales terms

- Availability: on stock – on request
- Delivery times: 2-8 weeks
- Prices: competitive, volume based
- Distribution within Europe: Ger-Pforzheim
- Payment: 10 days net



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Thank you very much for your attention

Please get in contact with us for detailed information:

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