BLUGLASS

A BRIGHTER FUTURE THROUGH LED TECHNOLOGY

INVESTOR PRESENTATION

May 2009

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Introduction

BluGlass Limited was formed to develop and commercialise a breakthrough low-temperature semiconductor technology

BluGlass aims to be a key player in the global semiconductor industry and contribute to the expansion of major niche markets by making end products cheaper

Presentation Outline

- Overview
- Announcements
- LED Update
  - Progress
  - Achievements
  - Market
  - Strategy
- Solar Update
  - RPCVD for Solar
  - Market
  - Strategy
- 2009-2010
  - Financials
  - The Future

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Overview

RPCVD appears to have significant cost advantages over conventional methods in the production of nitride semiconductors

- BluGlass (**ASX: BLG**) has been established to commercialise a breakthrough semiconductor technology resulting from more than 15 years research at Macquarie University
- The BluGlass **Remote Plasma Chemical Vapour Deposition (RPCVD)** Process has significant low cost potential in the production of nitrides such as gallium nitride (GaN)
- BluGlass is perfecting a disruptive new semiconductor manufacturing technology that is expected to deliver:
  - Lower manufacturing costs than traditional methods for GaN semiconductors
  - A lower-cost process for manufacturing low-cost, high-brightness white LEDs for the multi-billion dollar, global, light-bulb replacement market
  - An enabling technology for higher efficiency Photo-Voltaic solar cells with multi-billion dollar electricity generation potential
  - Environmental benefits
- IP comprises six patents lodged and a growing provisional patent pipeline
- **BluGlass is positioning to select, and pursue in-depth, the market with the best and fastest shareholder return**

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Announcements

Nitrides are emerging as one of the most exciting materials since the invention of the solar cell

- *RPCVD in the sunlight*

BLUGLASS LIMITED SEEKS TO EXPAND MARKET POTENTIAL WITH EXPLORATION OF NITRIDE SOLAR CELLS

- *BLK Korea*

BLUGLASS LIMITED SIGNS TERM SHEET FOR LICENCE AGREEMENT WITH BLK OF KOREA

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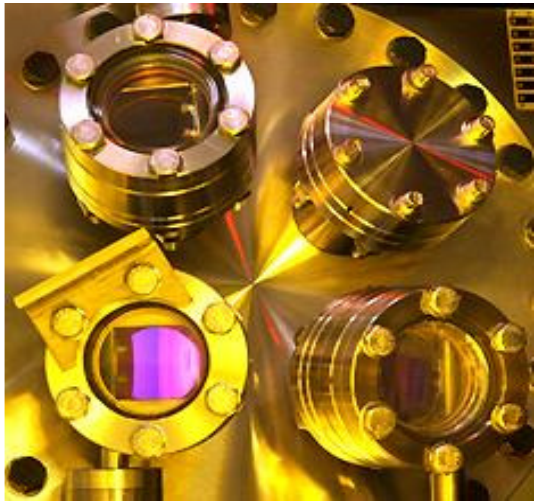
Achievements

Appointed distribution agents in key markets:

Japan and
Korea



- Purpose built, 1,260m2 demonstration facility, opened July 2008 by Federal Minister for the Environment, Peter Garret
- Demonstrated world's first GaN blue LED on glass
- GaN deposition wafer size increased; from 2" to 6"
- Key university and commercial collaborations
- Network of distribution agents growing (Japan and Korea)
- Strong IP position underpins commercial attractiveness
  - Six patents lodged, three in international filing
- Highly capable international technical and commercial team
- Adaptability of the RPCVD technology into new growth markets such as solar
- Created global awareness of RPCVD
- Working to finalise technology and commercial goals and enter markets in priority order

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Progress Update

Industry collaboration on process and technology development is critical to our commercialisation strategy

- Since listing in September 2006 spending has been in line with the IPO prospectus estimates
- Industry is taking note of developments
- Additional technology discoveries have been made presenting BluGlass with new business opportunities
- The technology roadmap is being adapted in line with industry feedback to reflect the challenges in developing the RPCVD process
- Overall technology progress has been slower than planned, however process optimisation is ongoing
- BluGlass is focused on finalising key parts of the process and addressing customer needs in the production of samples
- Discussions are underway with Global Strategic Partners
- Leveraging university support with Australian Research Council (ARC) Linkage program
- The next major technology milestones for the BluGlass are:
  - Process optimisation
  - Fulfilling requests for sample material
  - Further optimisation of deposition equipment

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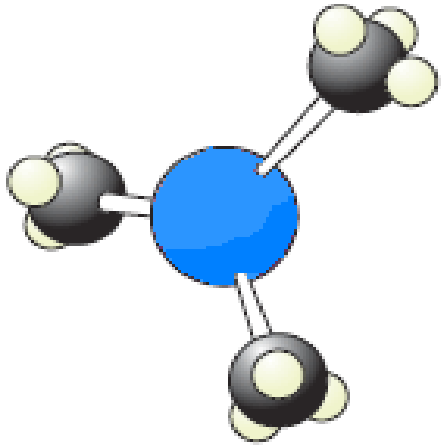
LED Update

GaN is considered to be one of the most commercially-important semiconductor material developed since silicon

With broadening of the market, sales are expected to grow at an average annual rate of 20.3% over the next five years to reach US$11.6 billion by 2013

* Source: Strategies Unlimited

An LED consists of a chip of semiconducting material



How LEDs are made

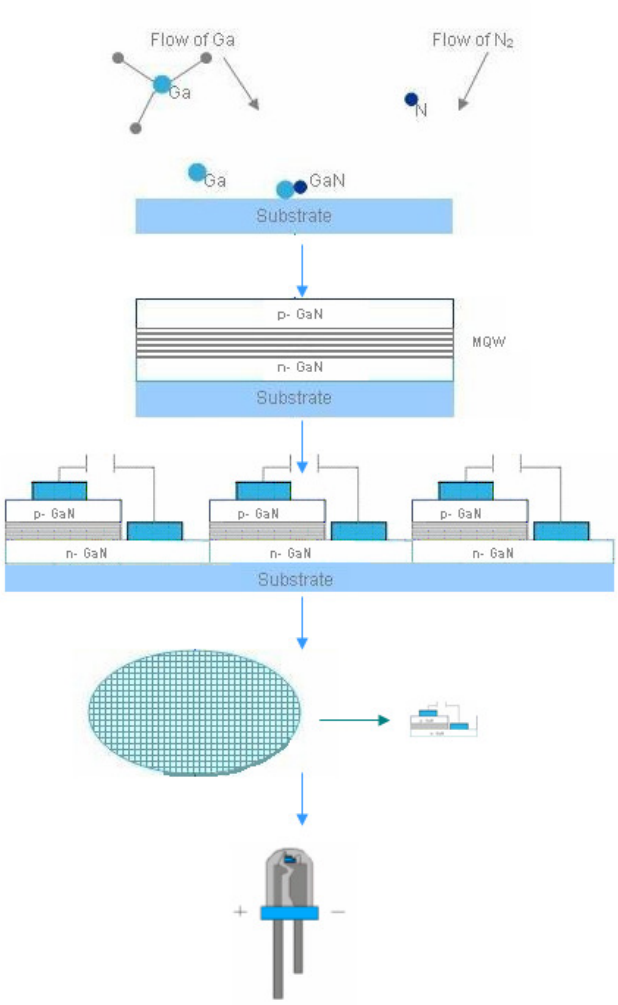
Deposition
Chemicals undergo a reaction in a deposition chamber to produce the required semiconductor material

Epiwafer
GaN based materials deposited on substrate (approx 5 hours) to create epi-wafer

LED devices
Epiwafer is etched and processed to make many LED devices

Dicing
The processed epiwafer is sliced into tiny chips (approx 10,000 per 2" wafer) and the LED devices are then separated into individual

Packaged Devices
The chip is then packaged into an LED device and inserted into a fitting



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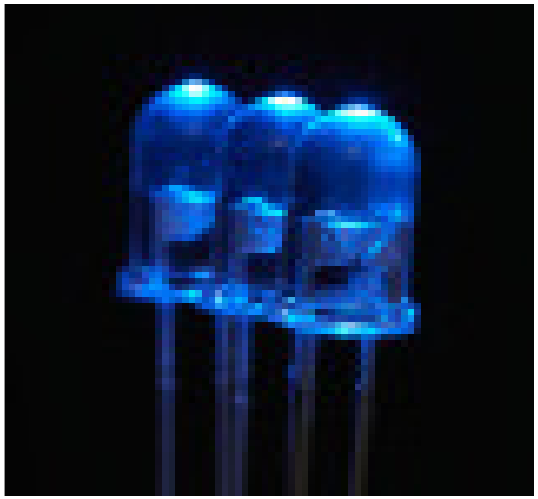
LEDs

LEDs are revolutionising the way we think about lighting



* Source: Strategies Unlimited

Why Light Emitting Diodes?

- **High efficiency by a factor of 10+ x over incandescent light bulbs**
- **Long life**
- **Compact**
- **Non toxic, throw away safe**
- **Ready made market**
  - LEDs are currently used in traffic signals, signage, mobile appliances such as mobile phones, laptops, LCD screens, car displays, torches, architectural lighting
- The biggest growth potential for the LED market is the general (household and commercial) lighting market
- Total market CARG of 19.9% to $12.5 billion in 2013* including all applications

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Environment

" It is possible to alleviate the need for 133 nuclear power stations in the US by the year 2025 if (LED) lighting is implemented"*

* Source: Prof. Shuji Nakamura

- Globally it is estimated that LEDs could save 30% of the electricity used in general lighting
- Our pilot plant is designed as an environmentally safe facility
- RPCVD does not require the use of toxic ammonia. It is replaced with inert and abundant nitrogen
- LEDs do not contain mercury and are safe to use and dispose

LED LIGHTS VS. INCANDESCENT LIGHT BULBS VS. CFLS

	LIGHT EMITTING DIODES (LEDs)	INCANDESCENT LIGHT BULBS	COMPACT FLUORESCENTS (CFLs)
Life Span *(average)*	50,000 hours	1,200 hours	8,000 hours
Kilo-watts of electricity used	6 - 8 watts	60 watts	13-15 watts
Annual Operating Costs *(30 incandescent equivalent)*	US$32.85/year	US$328.59/year	US$76.65/year
RoHS Compliant	Yes	Yes	No *(Contains 1mg-5mg of Mercury and is a major risk to the environment)*
Carbon Dioxide Emissions *(30 bulbs per year)*	205 kg/year	2046 kg/year	478 kg/year

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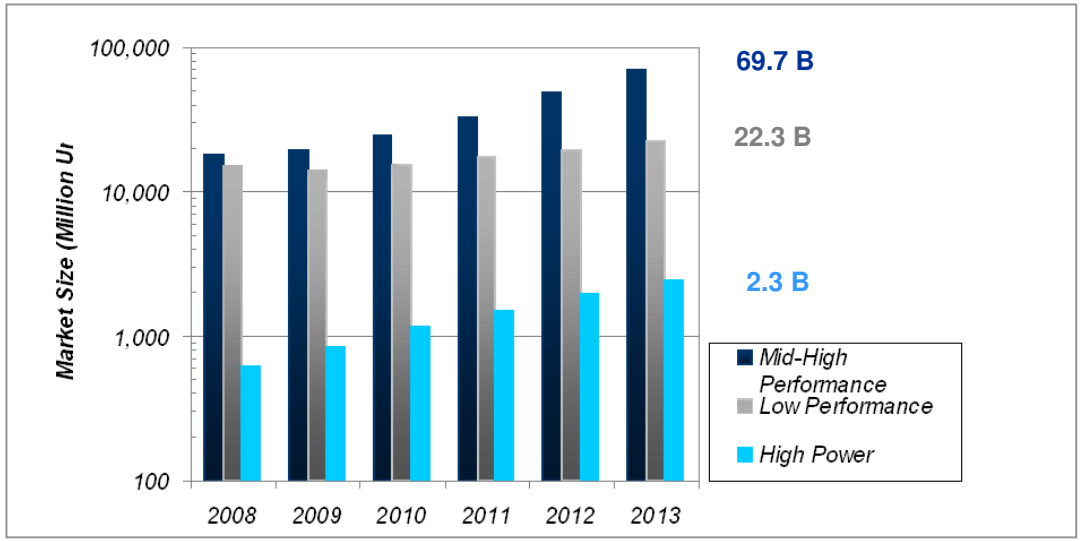
Market

LEDs in lighting applications have an expected CAGR of 31.5%*

* Source: Strategies Unlimited

Application market

- Low performance (e.g. mobile phone keypads)
  - CAGR 8.3%*
- Med – high performance (e.g. LCD backlights)
  - CAGR 31.4%*
- High power (e.g. lighting)
  - CAGR 31.5%*



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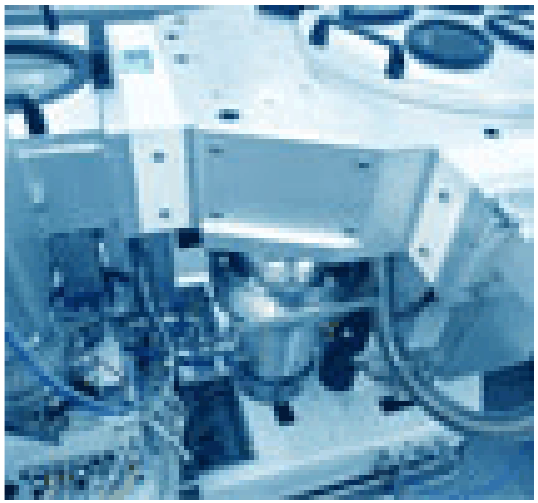
Market

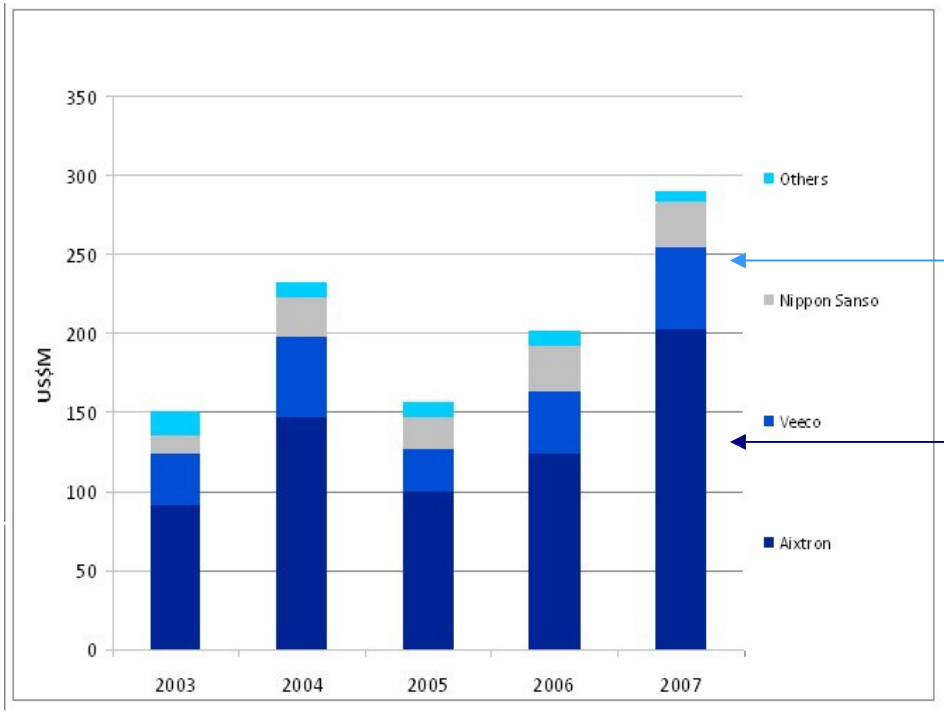
As the LED market expands, so to will the deposition tool market



*VLSI Research Inc, Aixtron and Veeco Investor Presentations

Equipment market

- RPCVD is an alternative to the current equipment and manufacturing standard, MOCVD
- The MOCVD deposition tool market is currently worth in excess of US$ 300 million*
- Dominated by two major players with gross margins of 38-41%*



US Based **Veeco**, NASDAQ Listed, US $240M market cap saw order intake up 40% in 2007*

German based **Aixtron**, NASDAQ Listed, US$0.5B market cap saw order intake up 50% in 2007*

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Industry Limitations

LEDs are currently limited by their high cost and their difficulty of manufacture

Current limitations in LED production

- **High cost of production**
- **Relatively low volume production due to scalability challenges in the size of the wafers used**
- **Complex and expensive IP landscape**

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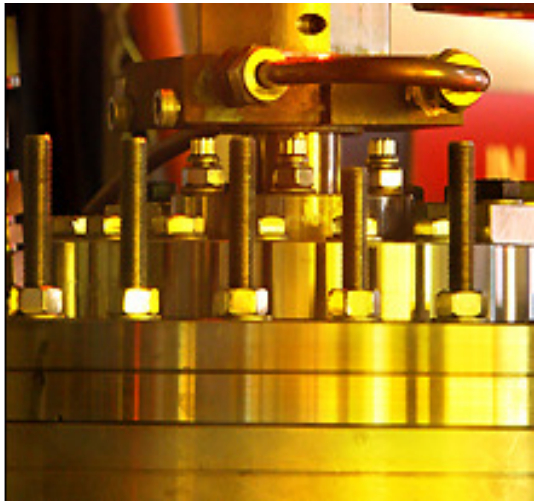
The BluGlass Solution

Freedom through novelty



RPCVD - A new technology

- **New IP approach**
  - resulting in lower licensing fees to device manufacturers
- **Environmentally sensitive production**
  - Inert/abundant source of active nitrogen
  - No toxic waste
  - Efficient use of metal organics
- **Advanced scalability and potential for increased yield**
- **Cost reduction**

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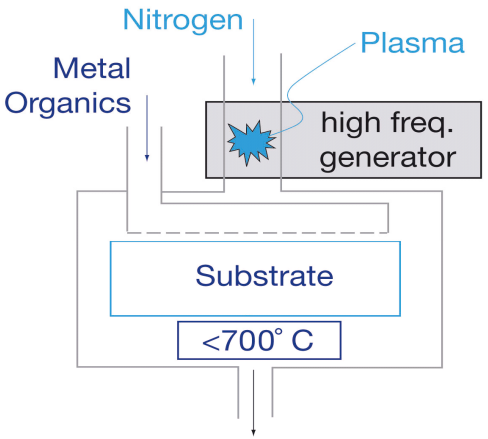
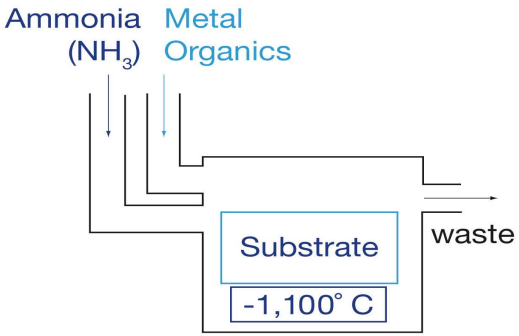
RPCVD





The advantages of RPCVD

- Significantly less wafer cost
- Nitrogen vs. Ammonia
  - Nitrogen is inert and abundant and cheap
  - Ammonia is expensive, extremely toxic and requires scrubbing
  - RPCVD is a cleaner process than industry standard
- Low temperature
  - Current standard uses temps of over 1000℃
  - BLG process operates between 500-800℃
  - Allows inexpensive substrates such as glass or silicon
- Inherent Scalability
  - High temps has limited the industry to mostly 2” substrates
  - BLG has demonstrated inherent scalability of RPCVD
  - Higher yield, less wastage due to uniformity over a circle

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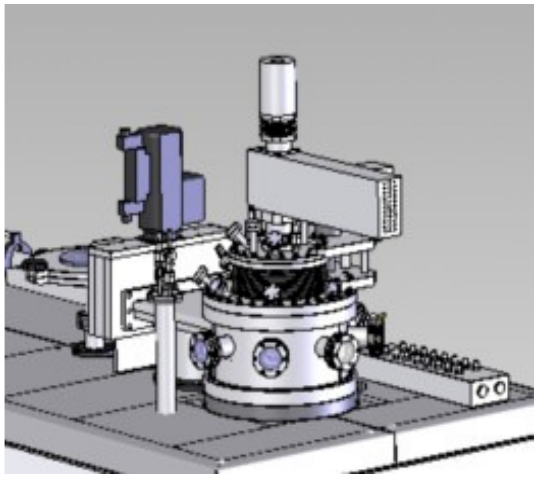
Value Chain

Equipment supply,

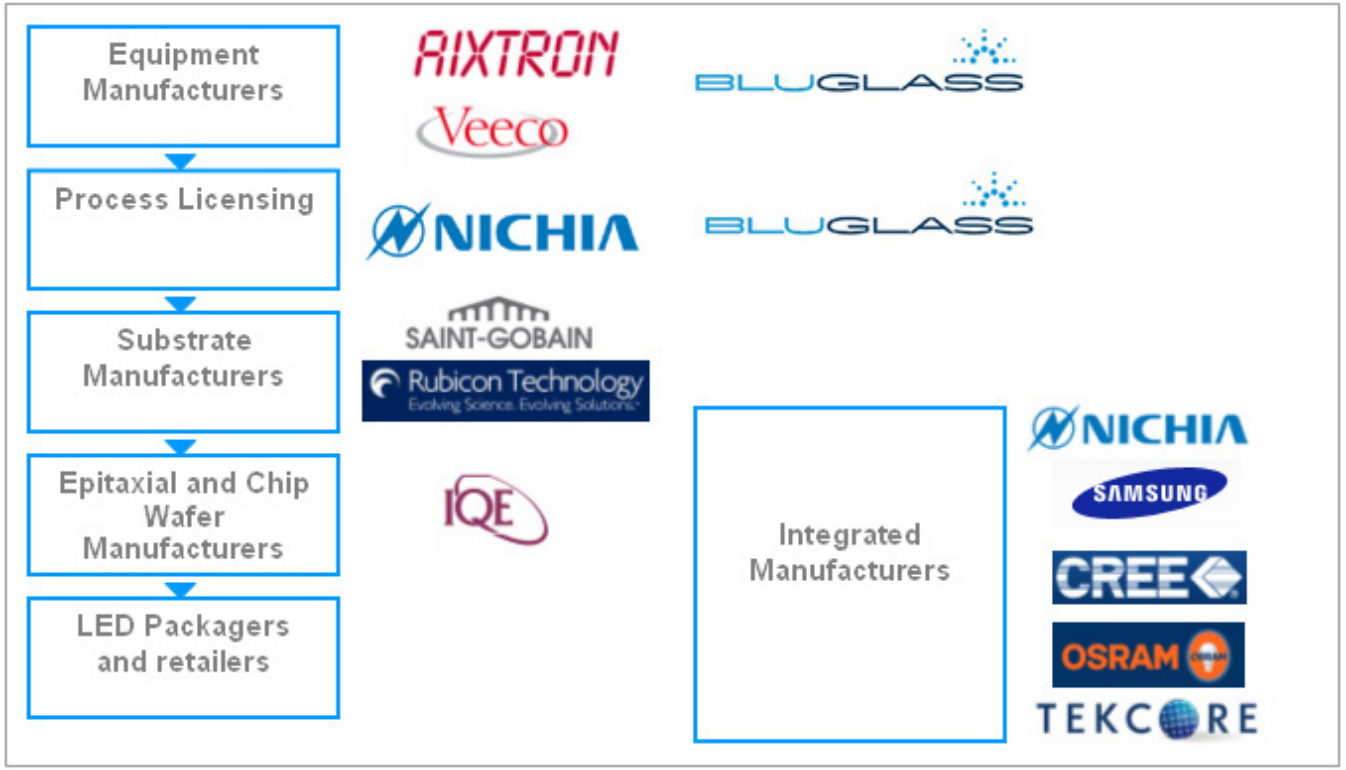
Process Licensing,

Epitaxial IP



The LED manufacture value chain

- BluGlass is currently addressing two aspects of the value chain as well as exploring device manufacture:
  - Equipment manufacture
  - Process Licensing



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LED Wafer Manufacturers

Capture value from the rapidly growing GaN LED market by sales, royalties and strategic partnerships

United States

- BridgeLux
- **Cree***
- **Philips Lumileds***

Japan

- **Nichia***
- Seiwa Electric
- Showa Denko
- **Toyoda Gosei***

South Korea

- Epiplus
- Epi Valley
- LG Valley
- NiNEX
- Samsung Electro-Mechanics
- Seoul Semiconductor

Europe

- **Osram Opto Semiconductors***

Taiwan

- Arima
- AU Optronics
- Chi Mei
- EpiLED
- **Epistar***
- Formosa Epitaxy
- Genesis Photonics
- Huga
- Lumitek
- SemiLEDs
- Tekcore
- Touchtek

China

- Aqualite
- Huinen
- Lanbao
- Lian Chuang
- Li De
- Lumi Optoelectronics
- Nanchang Sunrise
- Podium
- Shandong Huaguang
- Shanghai Blue Light
- Shenzhen Fangda
- Xiamen Sanan

*Largest Producers

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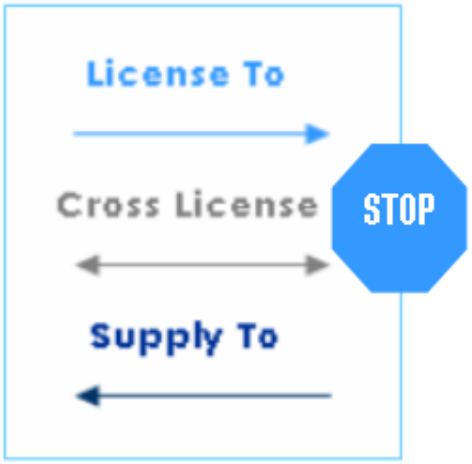
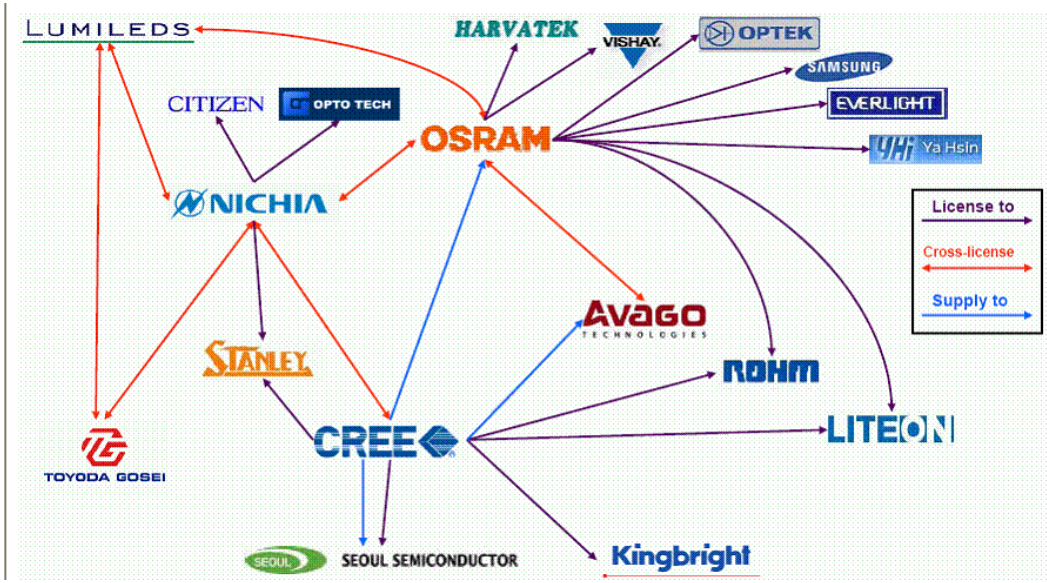
IP Landscape

An industry where knowledge and IP is key



- The semiconductor industry is governed by IP and strategic relations
- There exists a multitude of licensing, cross licensing and royalty agreements between the majority of companies
- BLG has a new process using a different method of manufacture which it intends to license as an alternative to the industry standard



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Strategy

Generating value from ongoing royalty stream by process licensing

REVENUE MODEL – Reactor sales and royalties

- BluGlass intends to address the growing GaN LED market as follows:
  - Manufacturing and sell reactors & process licenses
  - Investigating the merits of moving further downstream into device manufacturing
- Capturing value from RPCVD's lower production costs and ability to scale to larger substrate sizes
- Cost savings shared with customers by means of royalty stream to BluGlass
- Potential customer base is the ~40 (and growing) captive and merchant producers of GaN LED chips worldwide
  - Ranging from start-ups to the world's largest producers
- BluGlass is in discussions with a number of key industry players
- Already engaged in customer sample production and the process for commercial engagement is:
  - Samples → Site Visits → Commercial Agreements
- Distribution agreements in place in:
  - Japan (Itochu Plastics) and Korea (BLK)

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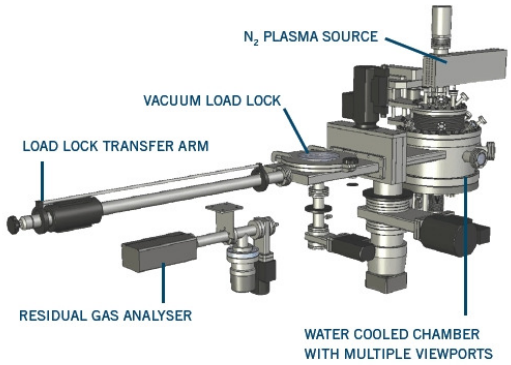
Products

BLG – 150

BLG – 300



BLG 150 DEPOSITION TOOL

- BluGlass offers two deposition tools with associated licensing and royalties

- **The BLG – 150**
- This is our market enabling strategy
- The BLG – 150 deposition tool has been developed as a versatile tool for low volume production and R & D applications suitable for:
  - Optoelectronic Devices
  - Transistor devices
  - Photodiodes
  - Thin film solar cells

- **The BLG – 300**
  The BLG 300 is the commercial scale tool suitable for the mass production of group III – nitride based LED's. It is currently optimised for 20 X 2 inch substrates per deposition run

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Solar Update

Solar photovoltaics will grow from a $20.3 billion industry in 2007 to $74 billion by 2017 Energy Business Reports

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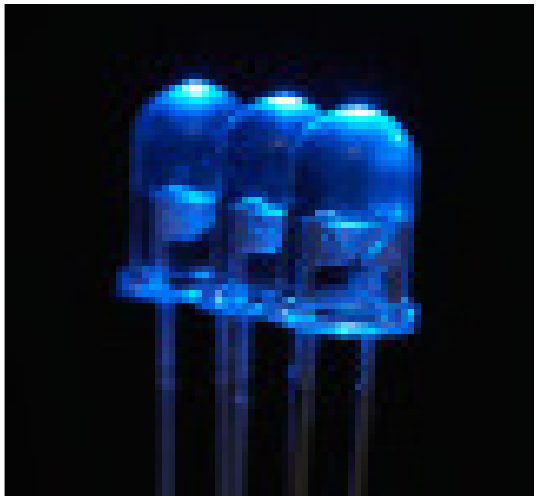
Nitrides in Solar

Nitrides have the potential to increase efficiency, durability, and applications for solar cells



- There is one emerging solar material that has the capability of covering almost all of the usable solar emissions range – Indium Gallium Nitride (InGaN)
- **InGaN for solar cells has the potential to:**
  - **Increase efficiency potential to over 50%***
  - **Exceptional radiation tolerance (space applications)**
  - **Longer durability and lifetime**
- BluGlass already has a depth of experience growing InGaN using RPCVD
- Band gap engineering required to take this technology across the line
- Solar market is a ready made and rapidly expanding market that readily accepts new technologies

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RPCVD Advantages

InGaN solar cells have a theoretical high efficiency performance of more than 50%*

* Source: Applied Physics Letters 91, Design and characterization of GaN/InGaN solar cells.

Low temperature, low cost, inherent scalability

- **RPCVD has the potential to offer several advantages to the growth of InGaN for solar cells**
  - Low temperature
  - During the growth phase the bonds between Indium and Gallium are fragile. A high temperature process such as MOCVD will crack and degrade the material
  - A low temperature process will allow richer layers of Indium to be deposited
  - Inherent scalability in the growth of nitrides, RPCVD has already proved its process has a straightforward scalability to 6 inch and beyond
  - Low cost potential
  - High performance potential. InGaN theoretical real world efficiencies expected to be above 50%

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Market

Thin film technology is the fastest growing solar market at 75% pa over the past 4 years

* Source: Solfocus / GTM Research

Solar market

- Grid connected photovoltaics (PV) continues to be the fastest growing power generation technology in the world with 50% annual increases in cumulative installed capacity
- PV is expected to grow from a US $20.3 billion industry in 2007 to a US $74 billion dollar industry by 2017
- Annual installations were just shy of 3GW worldwide, up nearly 500% from just four years earlier*
- Global growth in sales of PV is 37% CAGR over 14 years
- Thin film technology is fastest growing market segment at 75% pa over the past 4 years
- The Concentrated PV market in 2008 was 10 megawatts* and is expected to grow to 50 mega watts in 2009 with 500% growth*

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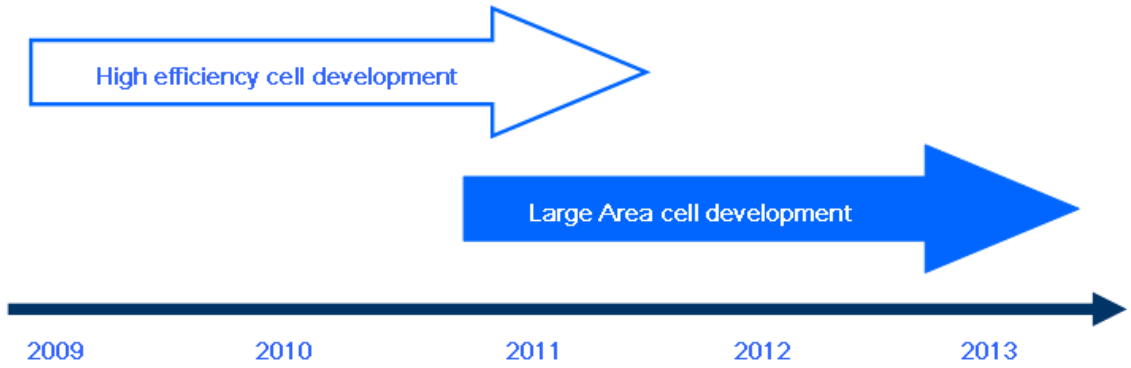
Strategy

Generating value from ongoing royalty stream by process licensing

Market enabling plan: high efficiency solar cells

- BluGlass intends to explore RPCVD as a growth process for the production of high efficiency solar cells
- Phase One of its exploration will be to produce a high efficiency solar cell prototype for industry testing
- The high efficiency solar cell market is a logical entry point for the RPCVD process
- The second phase of BluGlass' PV development will address high efficiency thin film large area cells



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BluGlass in 2009 and beyond

BluGlass will position the RPCVD technology for entry into both the LED and PV industries and will pursue the market with the best shareholder return

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The State of Play

BluGlass is well positioned to enter this rapidly growing market with its breakthrough low cost technology

- LED industry is emerging as next ‘star’ industry
  - **LED: Expected CAGR of + 20% to 2013**
  - **PV: Global growth in sales of PV is 37% CAGR over 14 years**
- The RPCVD process appears to have many benefits over existing technologies
- Strong IP position underpins commercial attractiveness
  - Six patents lodged, three in international filing
- Environmental and commercial benefits in adopting technology
- Global Alliances are already in place and further are under development
- Agents in key markets, Japan and Korea
- Highly capable international technical and commercial team
- Adaptability of the RPCVD technology into new growth markets such as solar
- Global industry and university collaborations in place

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The Team

The BluGlass team incorporates vast experience in both the commercial and technical fields

- Many years experience in:
  - Thin film nitride semiconductors
  - Commercialisation and international business development
  - Research and Development
- BluGlass staff are world leaders in the physics of low temperature thin film growth

DIRECTORS	MANAGEMENT	TECHNOLOGY DEPARTMENT
Dr. Michael Taverner Chairman	**Giles Bourne** CEO	**Guy Reynolds** Equipment Engineer
Greg Cornelsen Non-executive Director	**Geoff King** CFO	**Satanarayan Barik** Research Engineer
Chandra Kantamneni Non-executive Director	**Dr. Marie Wintrebert-Fouquet** Chief Scientist	**Alanna Fernandes** Research Engineer
George Venardos Non-executive Director	**Conor Martin** Equipment Design and Development Manager	**Phil Dixon** Equipment Engineer
John Riedl Non-executive Director	**Piotr Glowacki** Facilities Manager	**Yong Kim** Research Scientist

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Financials

Twice over-subscribed IPO in 2006 accepting $10 million

IPO 2006	$10 million
Seed Capital	$5 million
Government Support Granted	$5.6 million
Market Cap	$38 million (17 April 2009)
Shares on issue	167m
Top 20 hold	48%
Cash in hand	$2.4 million

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The Future

Generating value from ongoing royalty stream by process licensing

- Further development of the RPCVD technology
  - Optimisation of equipment
  - Optimisation of deposition process
  - Commercial sample production
- Sell process licenses and reactors to global LED manufacturers
- Investigation of downstream participation via device manufacturing
- Continue to develop global strategic partners and position BluGlass in the LED and PV sectors
- Investigate and develop markets for other applications such as transistor devices
- Further development into new growth markets such as solar

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Korean License Agreement

BLK will collaborate to commercialise the RPCVD technology in the Korean Market

Objective of collaboration with BLK

- BLK has signed a term sheet to become a licensee of BluGlass Limited for the Korean market
- Using in-house engineering know-how and co-work with LED industry, BLK will cooperate to commercialise the RPCVD technology in the Korean market
- Established sales and distribution chain to major epi-growth players in Korea
- Full support for service and maintenance for RPCVD tools in Korean market
- Adapt the RPCVD tools for mass production in the Korean market
- BLK will establish a pilot Epi Growth and chip plant using RPCVD technology for demonstration purposes
- Detailed negotiations are continuing

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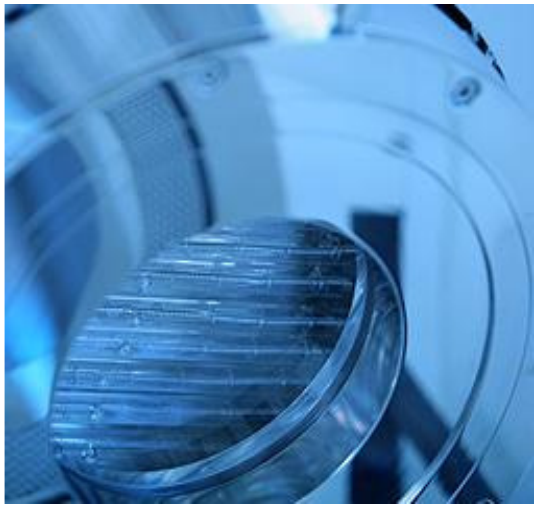
BLK

BLK are a dynamic new LED company employing leading industry experts



Introducing BLK

- Newly established Korean company (Aug 2008) by CNT International Pty Ltd (Korean agency) to expedite commercialisation of RPCVD technology in Korea market
- Located in Gwangju Techno Park (Gwangju is the heart of LED technology renovation in Korea LED industry with many related research institutes located near by)
- **Highly talented team of experts from the Korean LED industry**
- Key marketing Executives who are known in Korean LED industry
- Key engineering staff who have joined BLK from Korean epi growth/chip industry, global MOCVD tool manufacture, etc
- Strong business and political relationship in Korea to drive aggressive position to highlight the importance of RPCVD technology in Korean LED industry
- Strong support from various national project and private funding

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Korean Market

The South Korean Government has claimed strong support of the LED business, investing AUD $542.5 million in the next 5 years to eco friendly segments

The importance of the Korean Marketplace

- Highly advanced processing market for Epi Growth / Chip / Package / Power LED / Array / Module
- Full of experience of 1st generation HB-LED product on mobile phone back light unit (BLU) as a leading global mobile phone manufacturer (Samsung, LG)
- Strong government support for green technology development
- Well positioned global market leader for newly emerging LED market – HB-LED BLU for LCD TV (Samsung, LG)
- **Massive government and private investment into the HB-LED illumination market**

BLUGLASS
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THANKYOU

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