Preliminary results presentation

For the year ended 31 July 2019

NANOCO GROUP PLC

possibilities

DISCLAIMER

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It should be noted that past performance cannot be relied on as a guide to future performance. This presentation contains forward-looking statements with respect to Nanoco's plans and objectives regarding its financial conditions, results of operations and businesses.

The financial information referenced in this presentation does not contain sufficient detail to allow a full understanding of Nanoco's results. For more detailed information, the entire text of the Preliminary Results announcement for the full year ended 31 July 2019, can be found on the Investor Relations section of the Nanoco website (www.nanocogroup.com).

HIGHLIGHTS – SIGNIFICANT PROGRESS

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Operational highlights

- All milestones completed for US Customer
- Runcorn facility complete, validation underway
- CFQD® Quantum Dots performance significantly improved
- IP portfolio increased to ~750 patents and patents pending

Financial highlights

- **Revenue more than doubled to £7.1m** (FY18: £3.3m)
- **Adj LBITDA cut by ~40% £3.8m** (FY18: £6.2m)
- **Contracted orders for FY20 £3.5m**
- **Cash £7.0m Expect ~£6.0m by 31 Dec 2019**

NANOCO AT A GLANCE

Global leader in the R&D, licensing and manufacture of cadmium-free quantum dots and semiconductor nanomaterials

Business Description

Status:	Public (LON: NANO)
Founded:	2001
Headquarters:	Manchester, UK
Production:	Runcorn, UK
Employees:	76 (30 PhDs)

Key strengths include:

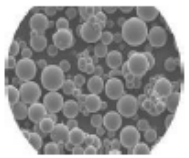
- Pioneer in Cadmium-Free® Quantum Dots (CFQD®)
- Among the largest intellectual property portfolios (~750 patents and patents pending)
- Unique scale-up and mass production capabilities

Critical Technologies

- Volume production
- Cadmium-free QD pioneer
- Infrared quantum dots
- Next generation 2D materials

Materials

Process



Surface Chemistry

Devices

LARGE AND DIVERSE END MARKETS

Tuning absorption and emission to match platform technology to specific market applications

CFQD

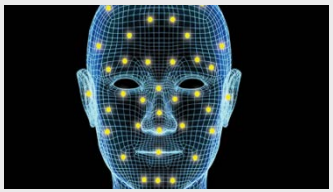
Life Sciences

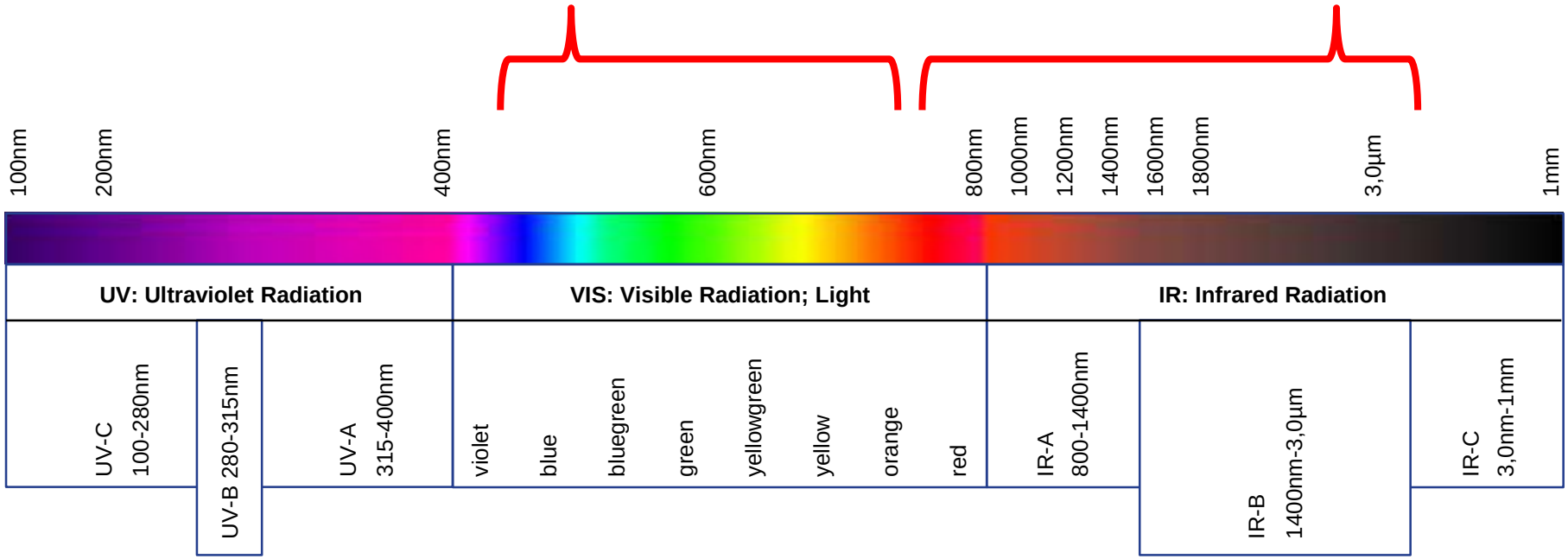
Display

Lighting

IRQD

IR Sensing





FOCUS ON IR SENSING AND DISPLAY

Sensing

- **Wide range of applications** including sensors for consumer electronics, automobiles and industrial controls
- Expands the spectral range of silicon in sensors to the **infrared region**
  - Improved detection
  - Lower power
  - Cost effective

Display

- Nanoco's CFQD® quantum dots offer **enhanced colour** and energy efficiency for displays vs LCDs
- QDs for display poised for **rapid growth** as QD film introduced for higher volume mid-priced TVs
- Samsung plans to launch next-generation hybrid **QD-OLED**, harnessing the benefits of both technologies
- QDs will play a critical role in colour conversion for micro-LEDs

Other

Lighting

- QD technology is well-suited for lighting applications
- Specific opportunity in vertical farming
  - Improved crop yields and faster growth from precise tuning of wavelengths
  - Minimises energy consumption and heat generation

Life Sciences

- Nanoco Vivodots™ nanoparticles offer the potential for important new bio-imaging applications including:
  - Medical imaging
  - Diagnostics
  - Therapeutics

PLATFORM TECHNOLOGY

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Backed by leading IP portfolio of ~750 granted and pending patents

Current Priorities

Molecular Seeding

Unique molecular seeding approach to manufacture CFQDs at scale

- Patented technology
- Reaction via cluster results in more controlled uniform growth than hot-injection
- Uniform growth results in QDs of consistent size distribution and therefore narrow FWHM
- Can cost effectively produce a range of QDs

Sensing

Expanding the spectral range of silicon in sensors to the Infrared region

- Direct integration with silicon CMOS technology
- Enables more sensitive, thinner, lower power sensors
- Inexpensive alternative to current InGaAs technology
- Use cases in a variety of sensors from LiDAR to Consumer Devices

Display

Superior displays with CFQDs

- QDs provide superior color and energy efficiency to competing technologies
- QD technology fits in the existing LCD supply and production chain
- Currently working in QD film applications
- Future applications in QD colour conversion for QD-OLED hybrids

Longer term

Lighting

CFQD Quantum Dot Grow Light for horticulture lighting

- QDs work with LEDs to provides the optimal spectra to encourage maximum chlorophyll absorption

Life Sciences

Nanoco Vivodots™ Nanoparticles

- Versatile platform technology for medical applications
- Positioned to penetrate several markets including medical imaging, early diagnostics, PDT and IVD

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ELECTRONICS

IR SENSING DRIVING GROWTH

3D sensing - consumer electronics, LiDAR, health monitoring and advanced imaging

The Problem

- Silicon sensors have poor efficiency in the infrared region
- Current technologies are subject to noise interference from natural light and use too much power

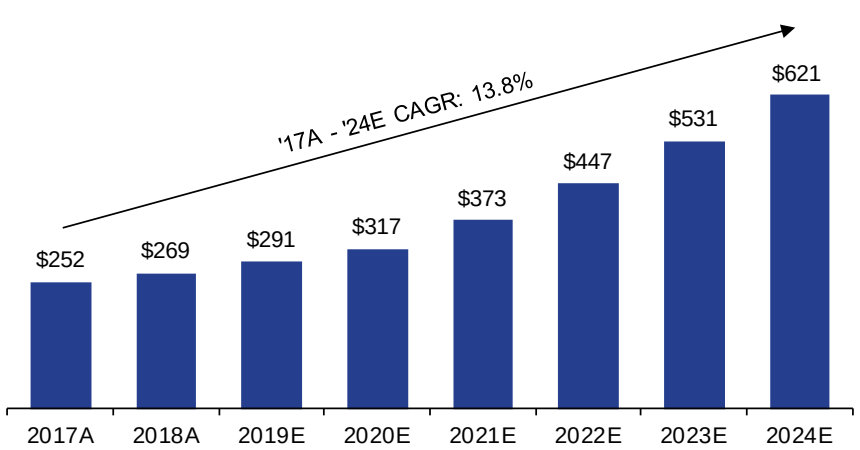
Nanoco's Solution

- IRQD improve sensor performance - Higher sensor detection efficiency
- Current application focus is on infrared sensors for human-machine interface (i.e. mobile devices) and autonomous vehicles
- Opportunity to expand the working dynamic range of CMOS devices

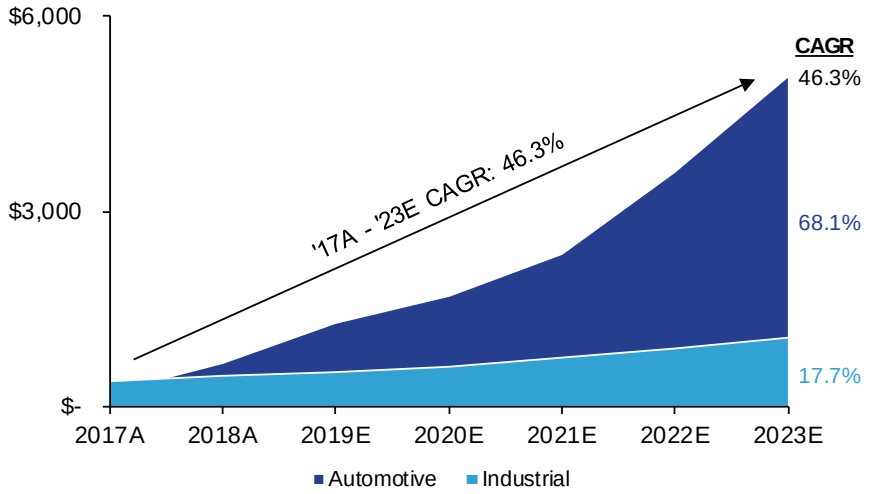
Nanoco's QD Differentiation

- ✓ Extended spectral range of silicon in infrared region
- ✓ Increased efficiency (~10x)
- ✓ Cheaper alternative to prohibitively expensive InGaAs based sensors and higher resolution

IR Detector Market Forecast ($m)[1]



Automotive and Industrial LIDAR Market Forecast ($m)[2]



1. Yole – Uncooled Infrared Imagers and Detectors 2019
2. Yole – LIDARs for Automotive and Industrial Applications 2018

IRQD FOR SENSING

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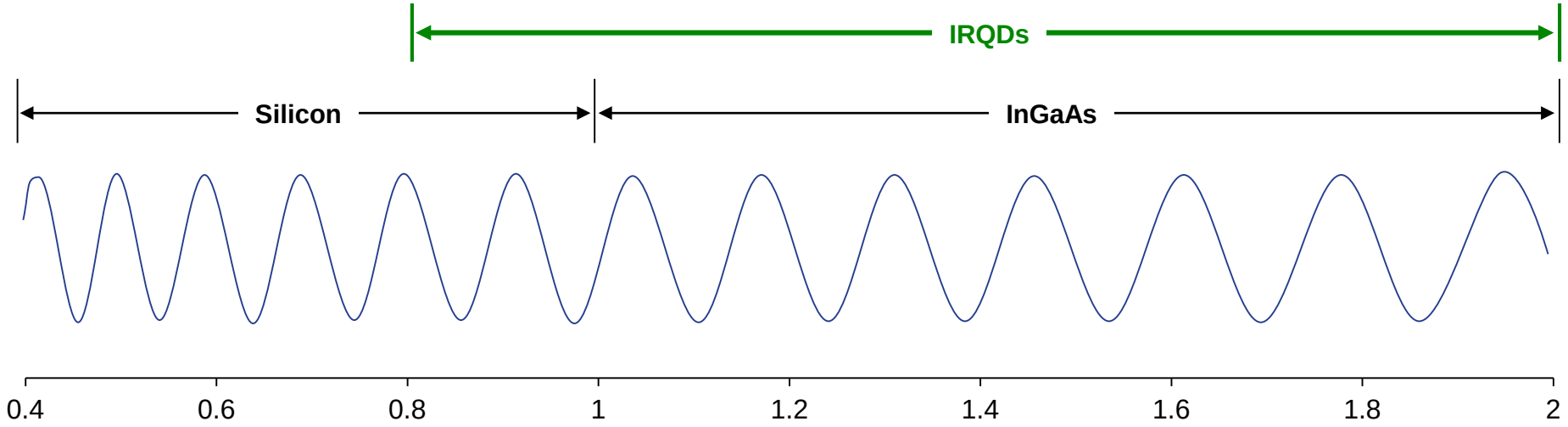
IRQDs expand the spectral range of silicon into the infrared region

Advantages of Quantum Dots

- Direct integration with silicon CMOS technology
- For near-infrared (NIR) applications, QDs allow for increased quantum efficiency over silicon devices at longer wavelengths (~950nm), generating more sensitive, lower power sensors
- Tuneable QDs allow for absorption in the short-wave infrared (SWIR) region (1100 – 2000nm), unlike silicon which is transparent past 1100nm – an inexpensive alternative to current indium gallium arsenide (InGaAs) technology
- Opportunity to expand the working dynamic range of CMOS devices for use in applications such as LIDAR, Machine Vision and Time of Flight (ToF) sensing

Wavelengths, µm



UNDERSTANDING THE US CUSTOMER

- Contracts worth c.£16.5m since February 2018 through to December 2019
- All technology milestones delivered
- Runcorn manufacturing facility designed, built, commissioned and currently going through final product validation by customer and supply chain partner
- Specific programme incorporating Nanoco IRQD film technology not proceeding – reasons not connected with Nanoco performance or material
- £4.25m CapEx loan to build Runcorn facility written off in its entirety
- Currently evaluating other use applications
- Nanoco is free and clear to produce and sell IRQDs from Runcorn to the broader market – revenue capacity of the new plant potentially quadruple CFQD plant

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DISPLAY

CFQD VOLUME GROWTH IN DISPLAY

Robust outlook driven by strong market demand and launch of next-generation hybrid QD-OLED TVs

- **Samsung has introduced QD film technology to mid-range TVs with higher volume**
  - Other display manufacturers such as Vizio, Hisense and TCL following
- **Samsung plans to launch next-generation hybrid QD-OLED TVs in 2021, which will further increase the importance of QD technology**
  - QD technology is more cost effective then OLED as it fits directly into the LCD supply chain
  - QD-OLED utilises 5x – 10x more quantum dots than QD film
- **Nanoco's success will be driven by the broad adoption of CFQDs in current film and QD-OLED hybrid type TV**

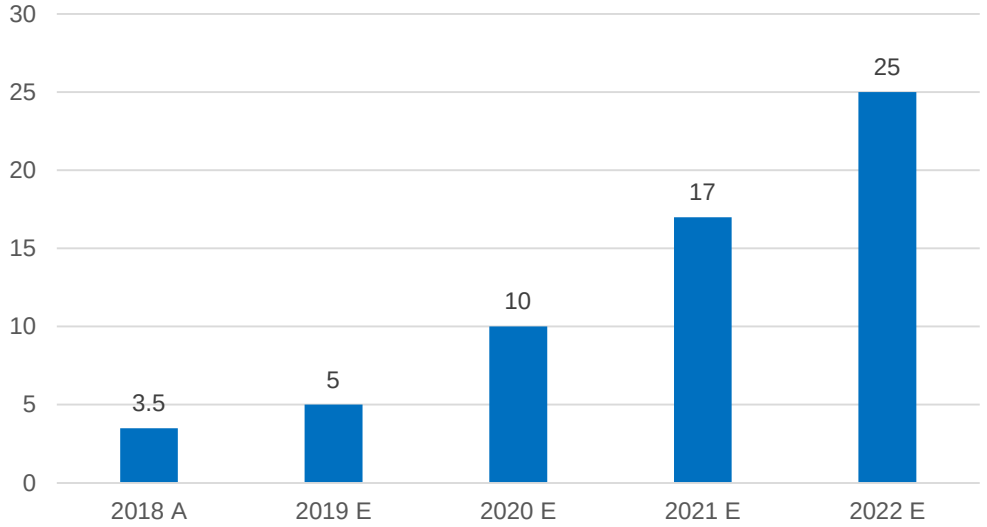
Recent News

Sep 24, 2019 – Samsung to invest $11 billion to build manufacturing lines for QD-OLED displays

Why Quantum Dots?

- ✓ **Improved colour saturation** relative to LCD
- ✓ **Narrow bandwidth** allows for more light extraction through color filters
- ✓ **Minimal process disruption**: Utilises existing LCD supply chain

Volume QD-TV (million units)



DISPLAY TECHNOLOGY ROADMAP

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Current technology

QD Film

- Continuous improvement in CFQD quality to meet display demands
- Aggressive reduction of COGS

1 – 3 years away

QD Color Conversion

- QD / OLED hybrid displays
- QD colour filter
- Improved colour gamut, brightness and viewing angle

5+ years away

QLED

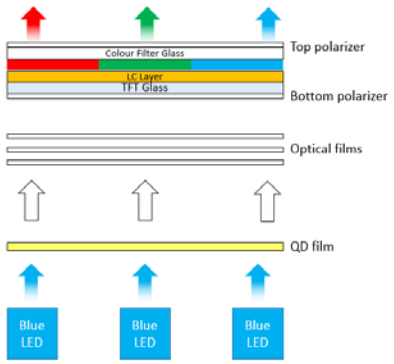
- EL QD
- Nanoco / Kyulux agreement
- Competitor to OLED
- Samsung to launch QD-OLED TVs 2022

Dow / DUPONT

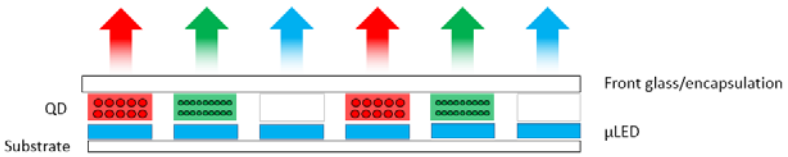
plessey

Kyulux

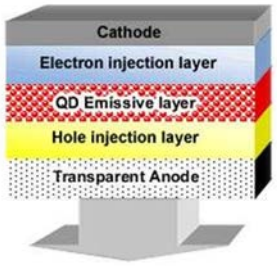
Conventional / Backlight Film



Micro LED / QD-OLED Hybrid

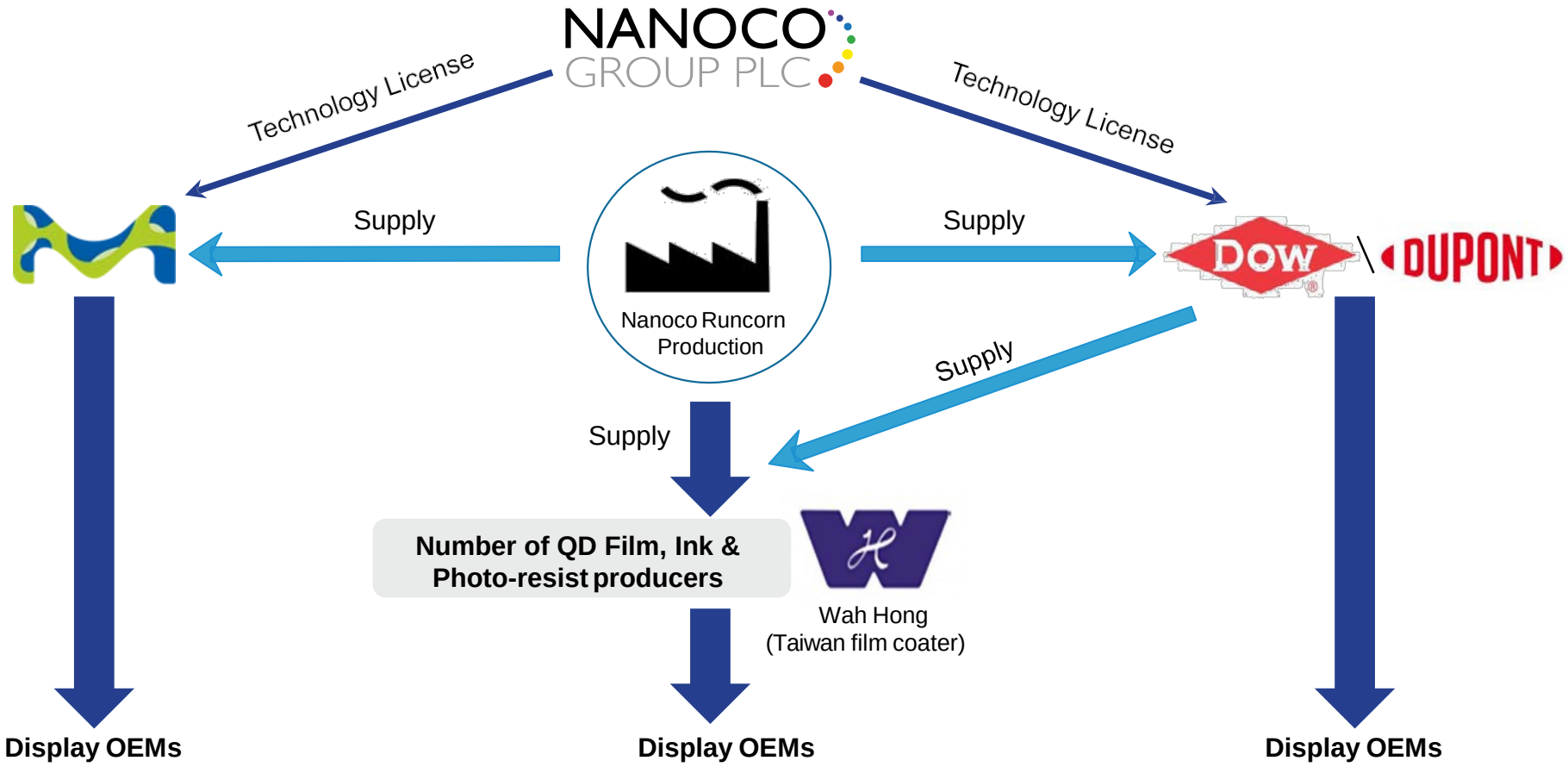


Electro-luminescence (EL)



HYBRID BUSINESS MODEL IN DISPLAY

Established partnerships position Nanoco to take advantage of large emerging display opportunity



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LIGHTING & LIFE SCIENCES

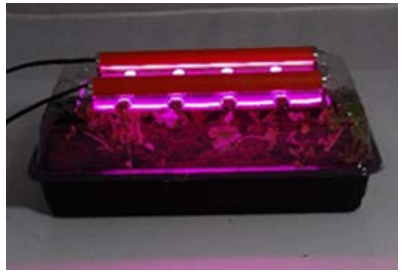
HORTICULTURAL LIGHTING

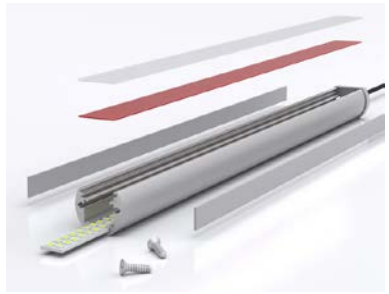
CFQD® Quantum Dot Grow Light is specifically designed for horticultural applications

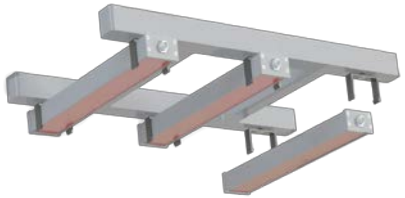
CFQD® Quantum Dot Grow Light Benefits

- ✓ Provides the optimal spectra to encourage maximum plant growth
- ✓ Allows for precise spectral tuning of the generated light to better suit specific plants and other application requirements
- ✓ Specific opportunity in vertical farming
  - Improved crop yields and faster growth from precise tuning of wavelengths
  - Minimizes energy consumption and heat generation
- ✓ Works with most blue emitting LEDs, no need for binning
- ✓ LEDs work in combination with CFQD® Quantum Dot films to ensure flawless and even light distribution at any distance without hotspots

Lighting Products & Applications







LIFE SCIENCES- VIVODOTS™ NANOPARTICLES

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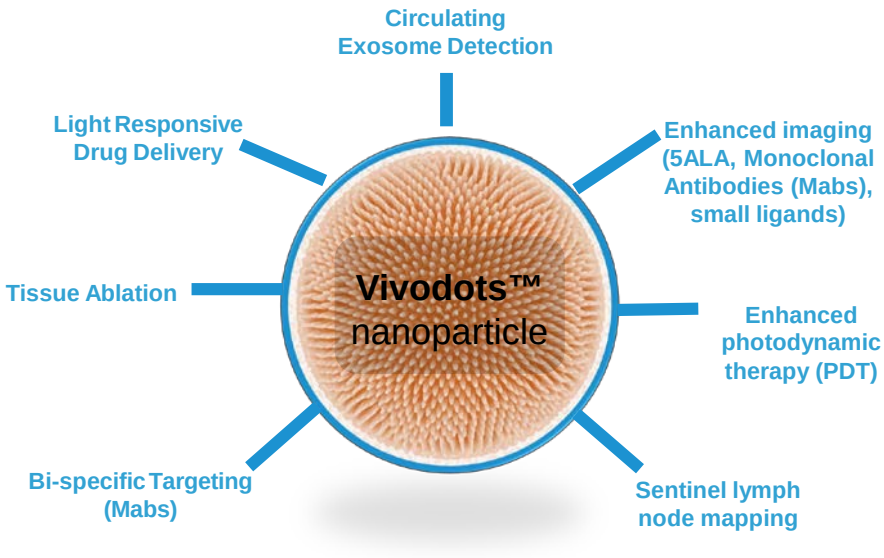
Disruptive technology and products driving innovation in nanomedicine

Vivodot Unique Capabilities

- **Versatile platform technology**
- **Bio-compatible (nontoxic) and strong safety profile**
- **Exceptional spectral properties that enable**:
  - Pinpoint detection (tumor demarcation)
  - High precision intra-operability (image-guided surgery)
  - Simultaneous multi-target detection (multiplexed disease cell targeting)
- **Enhanced targeting through efficient conjugation to Vivodots™**
  - Monoclonal antibodies, small molecules, biologics, peptide/ligands
- **Easily implemented into pre-existing clinical and research infrastructure**
  - Simple blue excitation attached to digital camera systems
- **Robust manufacturing process**

Vivodots & Partners Unique Capabilities



The University of Nottingham
UNITED KINGDOM · CHINA · MALAYSIA

NHS University Hospitals Coventry and Warwickshire NHS Trust

UCL

BRITISH SOCIETY FOR NANOMEDICINE

MANCHESTER 1824
The University of Manchester

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FINANCIAL REVEW

FINANCIAL HIGHLIGHTS

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Billings & Revenue

- Billings increased significantly on FY18
- Revenue and other operating income £7.3m - more than double FY18
- Release from customer contract liability which funded £4.2m Runcorn capex

Costs

- Created highly flexible mix of staff skills – supporting both electronics and display
- Cost base reduced in H2 to reflect lower activity levels and display pivot
- Overheads are now £4.4m below FY16 peak of £13.4m (annualised basis)

Cash

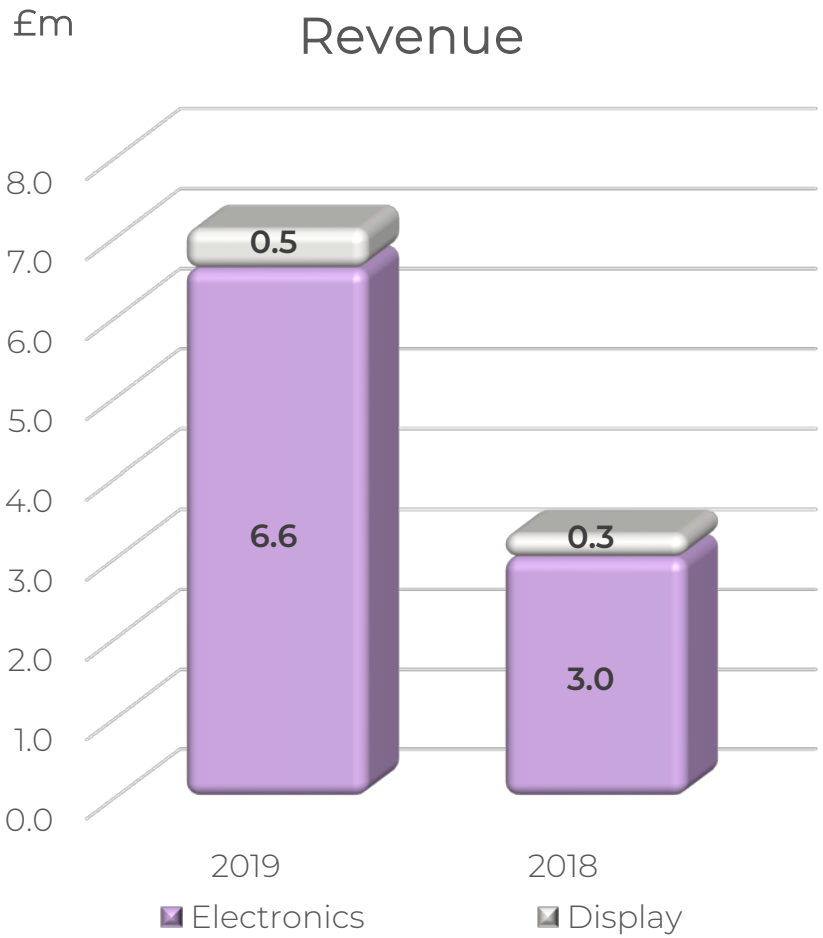
- Cash continues as a key management focus
- Monthly gross cash costs £0.8m (includes discretionary capex)
- Cash flow in the period to December 2019 expected to be broadly neutral

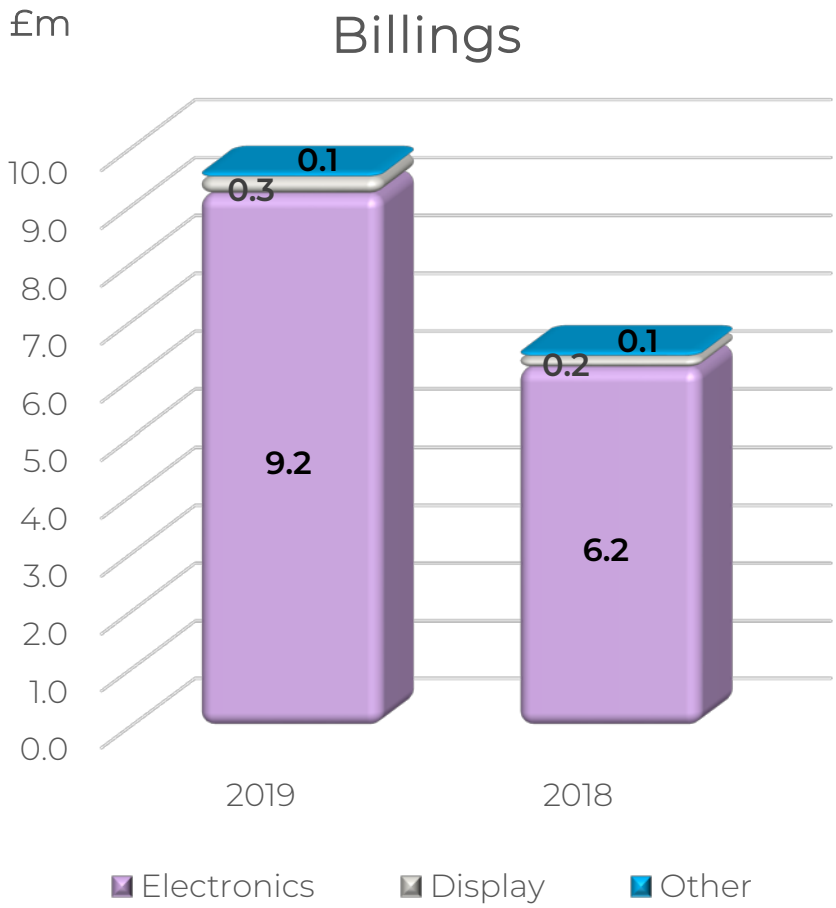
INCOME STATEMENT

	FY 19 £m	FY 18 £m	Change £m
Revenue and other operating income	7.3	3.5	+3.8
Cost of sales	(0.7)	(0.4)	(0.3)
Gross profit	6.6	3.1	+3.5
R&D investment	(4.4)	(4.0)	(0.4)
Other administrative expenses	(6.0)	(5.2)	(0.8)
Exceptional items and share based payments	(0.5)	(0.3)	(0.2)
Loss Before Interest, Tax, Depreciation & Amortisation	(4.3)	(6.4)	+2.1
Depreciation & Amortisation	(1.2)	(1.0)	(0.2)
Operating loss	(5.5)	(7.4)	+1.9
Tax and financing costs	1.1	1.4	(0.3)
Loss after tax	(4.4)	(6.0)	+1.6

- **Growth driven by service income in the electronics market sector (90% of revenue)**
- **Limited project related cost increases see almost 60% of revenue growth drop through to improved EBITDA**
- **Net exceptional costs of £0.3m, primarily relate to the end of the US Customer contract (ends 31 December 2019)**

REVENUE AND BILLINGS





- Electronics revenues driven by US Customer
- Display revenues derived from license agreements
- Billings driven by US Customer
- Display for royalties, other material sales

MOVEMENT IN NET LOSS

- Improvement in loss position driven by service income in the electronics sector (90% of revenue)
- Cost increase reflects project costs, higher average headcount (92 vs 86) and higher one off professional fees
- Q4 reorganisation cuts annual costs by £0.6m p.a. - headcount lower than FY18

ADJUSTING ITEMS

	FY 19 £m	FY 18 £m
Customer contract liability waived	4.2	-
Financial impairment of production facility	(3.3)	-
Onerous lease provision	(0.7)	-
Provision for contract specific stock	(0.3)	-
Other US Customer contract liabilities	(0.1)	-
Net impact of end of US Customer contract	(0.2)	-
Restructuring cost following display resource pivot	(0.1)	-
Total net exceptional items	(0.3)	-
Share based payments	(0.2)	(0.3)

- **US Customer agreed to waive contract liability (advance funding of Runcorn facility)**
- **Production facility impaired as no current commercial contracts post December 2019 – plant is fully unencumbered and free for Nanoco to use with other customers**
- **All US Customer items are non-cash / accounting only**
- **Restructuring flowed from display resource pivot in Q2, cost reductions implemented in Q4**

MOVEMENT IN CASH

- Capex largely the Runcorn facility (£1.9m) and continuing investment in IP (£1.0m)
- Favourable deferred income and working capital from contract with US Customer
- Still expect approximately £6.0m of cash on hand December 2019

FINANCIAL SUMMARY

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- → Billings increased significantly on FY18
- → Contracted orders and royalties for FY20 of £3.5m
- → Working on a number of new opportunities (display and sensing)

- → Created highly flexible mix of staff skills – supporting both electronics and display
- → We have protected our core capabilities – R&D, IP and Production
- → Major new production facility, financially unencumbered, significant capacity

- → Cash flow broadly neutral through to December 2019
- → Cash burn thereafter c.£0.8m per month if no new business wins
- → Cash runway to implement contingency plans if required

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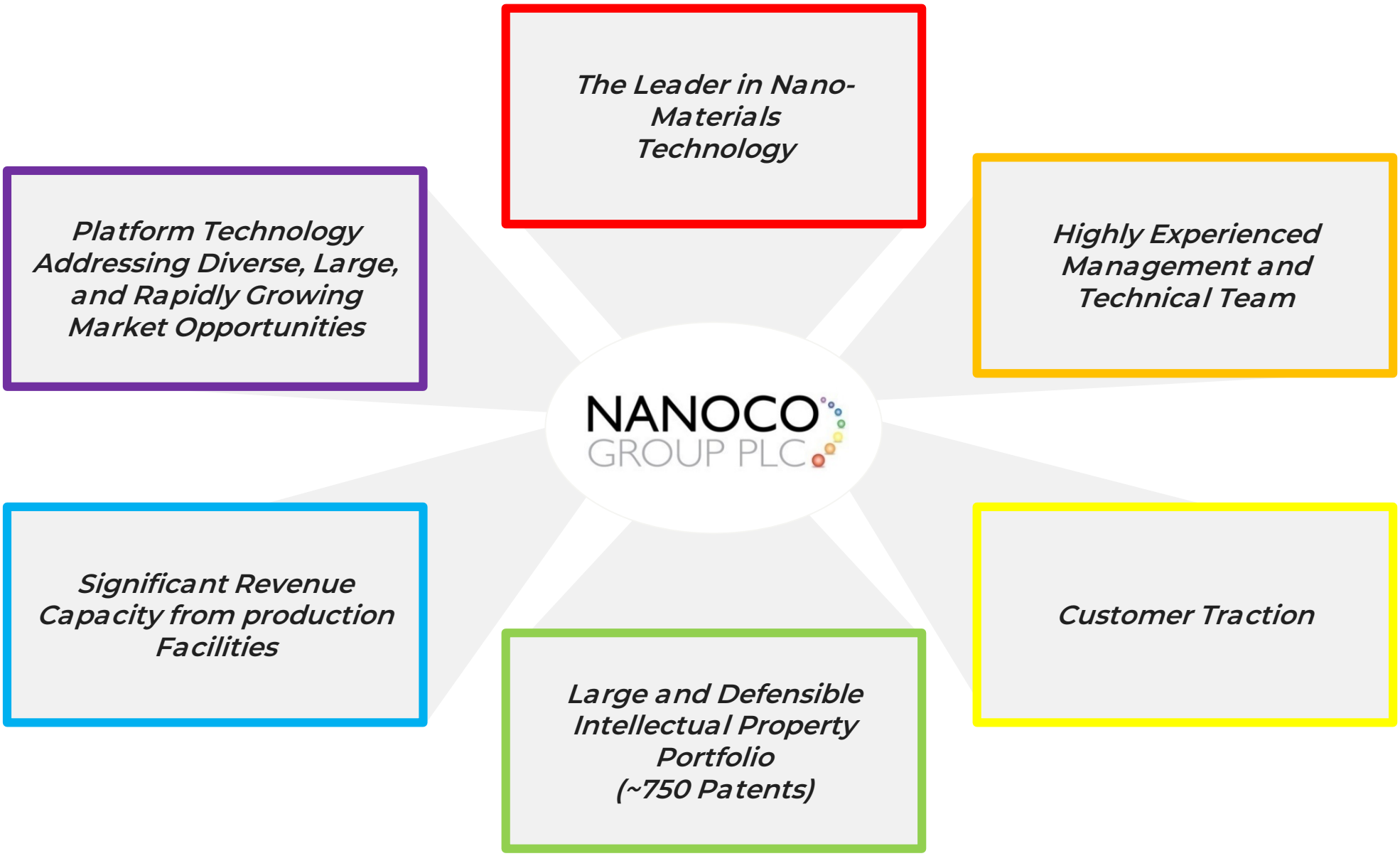
SUMMARY

SUMMARY


The Leader in Nano-Materials Technology
Platform Technology Addressing Diverse, Large, and Rapidly Growing Market Opportunities
Highly Experienced Management and Technical Team
NANOCO GROUP PLC
Significant Revenue Capacity from production Facilities
Large and Defensible Intellectual Property Portfolio (~750 Patents)
Customer Traction

NANOCO GROUP PLC

QUESTIONS

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APPENDIX

LEADERSHIP TEAM

NANOCO GROUP PLC

Dr Christopher Richards Non-Executive Chairman	• CEO, Non-Executive chairman, Arysta LifeSciences • 20 years of increasing management roles at Syngenta • Executive chairman of Plant Health Care • NED of Origin Enterprises plc
Dr Michael Edelman CEO	• Led spin-out of Nanoco from University of Manchester • GE/Bayer JV, founded www.yet2.com Europe, • Commercial Director Colloids Ltd, Brunner Mond, ICI
Dr Nigel Pickett Co-founder & CTO	• Inventor of Nanoco's key patented scale-up technology • Leading expert on semi-conducting nano-crystals • Japanese Government, St. Andrews University, Georgia Tech
Brian Tenner CFO / COO	• Experienced Quoted Company CFO with strong operational and transformation experience • Previously Board Member and CFO of British Nuclear Group Ltd, Scapa Group plc, Renold Plc, NCC Group PLC
Dr Alison Fielding Non-Executive (Remuneration chair)	• IP Group • NED of Getech Group plc • Astra Zeneca, followed by McKinsey & Co, then co-founded Techtran Group Limited which was acquired by IP Group in 2005 and subsequently held the role of director and COO at IP Group • Board member and advisor of several early stage and quoted IP Group backed technology companies
Chris Batterham Non-Executive (Audit chair)	• 20 years of Non-Executive experience in high growth technology companies including: • Blue Prism, SDL, Betfair and Iomart • Previously CFO of Unipalm, first Internet IPO

SHAREHOLDER ANALYSIS (AS AT 31 July 2019)

NANOCO GROUP PLC

Name	Shareholding	Percentage
Lombard Odier	51,754,688	18.08%
Hargreaves Lansdown Asset Management	40,948,854	14.31%
Mr Richard I Griffiths	16,200,000	5.66%
Interactive Investor	14,050,164	4.91%
Dr Nigel Pickett (CTO)	11,074,119	3.87%
Barclays Wealth	9,936,835	3.47%
Halifax Share Dealing	8,711,011	3.04%
Dr Michael Edelman (CEO)	1,324,734	0.46%
Total of shareholdings above	154,000,405	53.80%

Note: The total number of voting rights in the Company is 286,219,246

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