

#### Stock Data

Share Price:	16.70p
Market Cap:	£54.18m
Shares in issue:	324.42m
52-week high/low:	72.60p/15.60p

#### Company Profile

Sector:	Technology
Ticker:	NANO
Exchange:	LSE

#### Activities

Nanoco Group plc ('Nanoco', 'NANO', 'the Group') harnesses the power of nanomaterials. These are materials with dimensions typically in the range 1 - 100 nm. Nanomaterials have a range of useful properties, including optical and electronic. Nanoco is listed on the Main Market of the London Stock Exchange.

[www.nanocotechnologies.com/](http://www.nanocotechnologies.com/)

#### 5-year share price performance



Source: [LSE](http://LSE)

Past performance is not an indication of future performance.

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TPI acts as joint broker to Nanoco Group plc.

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## Nanoco Group plc

Nanoco has released final results for its year ended 31 July 2023. Delivering strong revenue growth and a substantially reduced adj. LBITDA for the period as anticipated in its Trading Update of 8 August 2023, with hedged litigation proceeds fully underpinning the Group's transition from an R&D first mover to a leading producer of QD materials in the short term, Nanoco appears to have reached an important inflection point. Having committed to return £33-40 million (or approximately 10p-12p/share) to shareholders from part of the second tranche payment due in February 2024 (net US\$71.75 million), the c.£20 million retained by the Group is being directed to accelerating development of higher performing second-generation materials, funding an IP licensing programme and becoming debt free, as it progresses toward commercial production. At this time, the Board expects to receive its first such order before the end of CY2023, which is likely to be for a low volume application (perhaps low millions of sensor units); once more generally adopted within the technology ecosystem, however, this could potentially expand to hundreds of millions simply for one application from just one high-volume mobile phone customer. Beyond Samsung, Nanoco is also seeing growing interest in CFQD<sup>®</sup> quantum dots for use in the display industry, extending to encompass Gen 2 QD as well as those utilising micro-LEDs, therein generating opportunity to both leverage its IP portfolio and commercially exploit its materials. Confident that such near-term potential will deliver tangible increases in shareholder value in the short-to-medium term, Nanoco's equity surprisingly prices in absolutely nothing for the Board's expectation that it will become a self-financing producer of high performing nanomaterials during CY2025.

### FY2022/23 - In line expectations, financially underpinned

During the year, as part of its litigation settlement, the Group sold non-core IP to Samsung which generated a profit on disposal of £68.7m (FY2021/22: £nil) and also licensed its remaining technology for £53.0m which is being recognised over 8.8 years. As part of the settlement, Nanoco dismissed its claims against Samsung. The total cost of the litigation process including the contingent funding was £49.3m. The net result was to allow Nanoco to end the period in its strongest financial position since inception:

- Revenue more than doubled to £5.6m (FY22: £2.5m);
- Adjusted LBITDA loss reduced by 83% to £0.4m (FY22: £2.3m LBITDA);
- Year-end cash £8.2m, an increase of £2.2m since 31 January 2023, having retained £4.5m of the first tranche after paying all related litigations costs.
- Payment and use of proceeds from the litigation settlement:
  - First net tranche £59.2m received March 2023, used to pay litigation costs;
  - Second net tranche £58.8m due by 3 February 2024, wholly for Nanoco, fully hedged.
- Gross fixed cash cost base c.£0.5m/month before revenue and other operating income – an increase of just over £0.1m/month following investment in new staff capacity and inflationary cost increases in H2 FY23.

### Current trading – First production order anticipated shortly

Discussions leading to the Group's first ever production order continue to

advance, with expectation of being received before the end of CY2023. This will represent something of a watershed moment for the Group. As might be expected with the introduction of such a new application, initial demand is likely to be for relatively low 'trial' volume (say, low millions of units which might generate c.£1m to £3m revenue), although anticipated wider acceptance could rapidly lead to it becoming included as part of a standard offering. This, in turn, might result in much broader adoption (potentially leading to hundreds of millions of units in mobile applications) as subsequent versions and generations are rolled-out.

Sensing and display markets are forecast to sustain rapid growth going forward. Customers are also seeking longer and deeper collaborations for the development, scale up and commercial production of nanomaterials for use in sensing devices. Recognising the opportunity this presents, Nanoco is now investing retained litigation funds in order to expand its range of high-performing materials, developing new materials with enhanced performance while broadening its marketing reach. Beyond the two active long-term customers (a European electronics customer and a major Asian chemical customer) the Group is already working with, management is expanding its commercial R&D contracts with a number of sector and related players with the goal of adding a further global electronics supply chain customer in the current period.

Having started FY2023/24 with a limited short term order book for development work due to the successful completion of a large contract with the European customer in April 2023, discussions are ongoing regarding the development of a next generation material and on commercial supply terms for production orders. These will run in parallel with any new development agreement and, should these negotiations be successful in combination with other ongoing activity, the Group order book is expected to rise sufficiently to deliver similar services and material revenue to that seen in FY2022/23 (which was split: £3m Display licencing, £2.6m Sensing services & materials), while licence income will instead reflect £6m full year of the litigation settlement. Importantly in this respect, Nanoco estimates that its recurring cash cost base for FY2023/24 will be c.£6.4m, which is only just over half the c.£11.0 million seen in FY2018/19. This has been achieved without losing any of its core 'dot only' capabilities.

### **Investing retained litigation proceeds – Funding to the point of becoming self-financing**

As was outlined in the Reduction of Capital Circular issued on 20 June 2023, the Board intends to invest retained litigation proceeds as follows in order to exploit the promising opportunities it is currently presented with:

- Funding the Group's commercial business activities until they become self-financing (expected in CY2025);
- Pursuing a number of promising investments in R&D to accelerate the development of new generation sensing materials;
- Capital investments to improve production efficiency;
- Capital investment to expand footprint at Runcorn by creating in-house device capability;
- Self-financing the IP licencing programme while retaining ownership and control of the Group's core IP which also includes significant know-how and trade secrets;
- Paying off the Group's entire current borrowings (c.£5.0m) to become debt-free; and
- The Group will also maintain a cash buffer for working capital and to mitigate the risk of unforeseen events.

### **Return of Capital – Method of return yet to be decided**

No decision has yet been taken as to the method of the proposed return of capital to shareholders and further announcements will be made in due course. Having overseen a capital reduction to create the sufficient distributable reserves to facilitate the return in July 2023, the Board is widely expected to declare either a special shareholders dividend or initiate a share buy-back programme (or perhaps a combination of the two).

### **Operational Summary - Preparation for commercial production**

Key points of progress in the Group's preparation for its move toward commercial production are detailed below:

- Achieved all development, scale up and production readiness milestones
- Two sensing materials in final production validation with customer

- Deeper and longer development contracts under discussion with two long-standing customers
- Increasing customer engagements for CFQD materials including micro-LED displays

### **Display (CFQD® quantum dots) - Positioned to seize true opportunity of its IP**

Nanoco is continuing to adopt a dual approach to commercial exploitation of its display materials, through both licencing and material supply from its own manufacturing capability. Not surprisingly, activity and new inbound enquiries about display materials have expanded following the Group's success with its patents at the Patent Trial and Appeal Board ('PTAB') and the final outcome to the litigation. In anticipation of this, it has already completed a number of critical first steps for further potential monetisation of its IP; these include identifying potential infringers and associated devices, analysing those devices, and shortly after the end of FY2022/23, began engaging with companies who may want or need to take a license over Nanoco IP.

In financial terms this may take some time to deliver, but an expanding range of products/applications along with a number of display manufacturers choosing to anticipate prospective legislative enforcement of cadmium-free solutions through the Restriction of Hazardous Substances ('RoHS') Directive 2002/95/EC, suggests both an expanding market and longer-term opportunity. Supported by conclusions from [independent market research](#) that forecast a continuing fall in Samsung's flat-screen market share (now below 90%) while QDs are projected to expand from c.6% in 2022 to c.34% by 2030 due to their enhanced colour and efficiency versus LCDs, this is seen creating important opportunities for Nanoco. This represents a rise from c.2m non-Samsung, non-Cadmium screens from c.2m to c.70m units. Having already validated its IP for mass production, the Group's ability to service its prospective customers is further supported as follows:

1. As a manufacturer of cadmium free quantum dots, its Runcorn facility can be readily expanded; and
2. As the owner of a validated IP portfolio and process know how which is fundamental to the manufacture of cadmium free quantum dots on an industrial scale.

Beyond the flat panel market, application of quantum dots to micro-LEDs for small screen devices, such as smart watches or phones, is becoming a new and potentially important focus for a number of industry participants. In such applications, the volume of quantum dots, as a ratio to the area covered, is significantly higher than in a film for a television. So, while the end devices may be smaller, this is partly compensated for by the higher concentration level for quantum dots required by those devices. Recognising that substantial development of QDs is still required to fully satisfy the needs of such prospective customers and to accelerate breakthrough adoptions, the Group has created a QD Display Technology Roadmap to support its research in future QD-µLED and QD-EL market opportunities.

As such, Nanoco is well positioned to take advantage of any broadening in the adoption of non-toxic quantum dots by global display manufacturers when the opportunity arises. Moreover, the experience of reaching a settlement and licence agreement with Samsung clearly demonstrated the user's need to access its IP and technology. Having created a 'landscape of potential infringers', comprising a universe of 16 volume producers, the first eight to be assessed identify two that presently offer cadmium-free QDs.

Although this does not 'prove' infringement, private discussions with these parties have (or are about to) commenced with a view to potentially reaching a financial settlement/licencing agreement, while the fallback option of reverting to litigation remains should the parties choose not to cooperate. Management has set a target date of end-CY2024 to conclude these or consider further action. With a final eight still to be considered, it seems increasingly likely that existing/prospective violators who might in the past have chosen to incorporate the Group's patented IP without first entering into either a licence or material supply agreement, will now be dissuaded from such action due to the prospective strength of Nanoco's balance sheet and its declared option to self-fund (based on risk-reward) their vigorous pursuit.

### **Sensing Electronics - Achieved all development, scale up and readiness milestones**

Nanoco principally targets camera and imager opportunities within the total CMOS Image Sensor market ('CIS').

Research group, [Mordor Intelligence](#), forecasts 2028 value of c.US\$650m (2022: US\$97m) for imagers and US\$2,900m (2022: US\$322m) for cameras, by when the overall CIS market is expected to reach US\$30bn. This projection anticipates multiple end-use sensor applications, including broad adoption of short-wave infrared by high volume mobile phone manufacturers by 2026, which is expected to support the drive for consumer devices representing 70% of the camera market over the following two years. Given the numerous advantages QDs have over silicon (most specifically in terms of a six-fold increase in near-infrared ('NIR') efficiency and the exceptionally high cost of alternate indium gallium arsenide ('InGaAs') products), they appear to be well positioned for breakthrough adoption.

The Group's existing European (high-volume potential) and Asian (mid-volume potential) customers operate in large global markets, wherein final customer adoption of QD CMOS sensing technology could lead to significant revenue growth for Nanoco. Having already committed significant investment in Nanoco materials as part of their production and marketing efforts, this view appears to be strongly supported. For its part, Nanoco already has created the flexibility, capability and capacity to meet whatever scale of demand requirement they might require. Validation of its IP in the Samsung litigation process also produced fresh inbound enquiries not just for display but also for sensing applications, reflecting the fact that its scale-up IP is applicable to both technologies and of interest to major sector players through to tech start-ups. Nanoco is presently in reasonably advanced discussions with a further large QD player (high volume potential) that it expects to join its customer list during this financial year.

Processes for two sensing materials have been successfully scaled-up to industrial production levels for consumer electronics. Both are now in final production validation with the Group's major European electronics customer and two new second generation material have passed the 'proof of concept' stage. Although, as noted previously, the size of any first production order for the materials in final validation is likely to be modest in scale, this would clearly represent a major milestone of the technology and production capacity, with scope for broader and potentially longer-term adoption. Progress was also made throughout the year on a number of sequential short term development projects for the Group's major Asian chemical customer. Material performance has exceeded challenging expectations, and discussions are ongoing around further collaboration. In order to remain at the forefront of technological development for QDs and address the needs of its customer base, Nanoco is developing new advanced material systems based on patented seeding technology. Having based its first image sensor products on Lead (Pb), next generations products with superior electrical properties, including Indium Antimonide (InSb) and Indium Arsenide (InAs), along with greater chemical and thermal stability etc.

It is recognised that relatively slow adoption of nano-material technology creates commercial challenges for both Nanoco and its competitors. Shareholders will be aware that development cycles for new advanced materials for use in consumer electronics can be particularly extended with, for example, Samsung known to be working with quantum dots for over ten years before commercialising the technology. Such development cycles tend to be long because the supply chain often needs to be re-engineered on top of developing QD material. In this respect, one of the advantages of the QD enhanced CMOS sensors that the Group specialises in, is that the material represents an extra layer in a pre-existing material stack. Reaching final product validation testing within six years demonstrates Nanoco's clear ability to develop and scale novel materials to the exacting standards of consumer electronics applications in what is, in fact, a relatively short time frame. For exactly the same reasons, once adopted the technology tends to be 'very sticky', ensuring long-run, high margin supply agreements.

## **Nothing priced in for the Board's confidence it will become self-financing during 2025**

Retaining in excess of £40m in carried forward losses (£10m recognised), the Board is confident that its remaining tax liability from the settlement will be modest, which leaves it with cash plus promised cash in excess of the Group's current market capitalisation. Although shareholders do not presently know the exact 'shape' of the declared distribution of surplus litigation proceeds expected in February 2024, it would be a surprise if it were not to be in the form of a special dividend(s) and/or the initiation of a share buyback programme.

Recognising management's confidence in its technological capabilities/validated IP and its ability to exploit the longer-term opportunities these present, a fair proportion of the available cash is being reserved and directed

toward, amongst other things, enhancing and automating production capacity and eliminating debt, while expanding marketing amongst what is a relatively limited number of very large existing and potential customers. The Board anticipates this will deliver a self-sustaining business model during CY2025, which includes its ongoing ability to self-finance rapid follow-up of all/any further IP infringements without recourse to investors or assuming new leverage. Given the Board's success in rigorously defending Nanoco's technologies while continuing to develop its global opportunities and market position, it is rather surprising the equity, which is presently valued on the basis of just current cash plus promised cash, prices in absolutely nothing for its comprehensive IP, its unshakable confidence that commercial production will commence in the near term while almost uniquely addressing the very large long-term, expanding opportunities for CFQD<sup>®</sup> cadmium free quantum dots in the international sensing materials and the display markets.

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