



Nanoco Group PLC

Executive Summary

Nanoco PLC, valued at £18.3m, on latest run-rate (adjusted) revenues of less than £1m and an unprofitable business, screens expensive. However, with net cash of over £15m and a plan to rapidly commercialise the business, this is by no means what it initially appears to be.

Furthermore, and more importantly, with management planning to sell the businesses and turn Nanoco into a cash shell to then distribute the proceeds to shareholders, there is a very simple case here that the market struggles to piece together.

The key determinants here are what does Nanoco get sold for and how long does it take? From there, we add the proceeds to the remaining net cash balance (after adjusting for cash burn) over that period to get a rough value.

It's important to also factor in Nanoco's litigation against LG (patent infringement lawsuit) which could resolve favourably before Nanoco gets sold (highly unlikely). However, if the lawsuit is resolved before Nanoco gets sold, the "value" of the lawsuit will get transferred to the acquirer (and will have to be reflected in the sales price).

Why The Opportunity Exists

Usually, I don't bother with this section. The opportunity exists because the market is slow or has become overly pessimistic. In this case, however, I really feel investors don't fully understand Nanoco nor do they want to for two reasons.

The first problem – to me – was that the Nanoco annual report does not read easy. I've read many reports and this suffers from a poor structure, verbose wording and confusing sections/graphics. It's no surprise that there isn't much noise around the company. Furthermore, instead of citing Nanoco's opportunities, management constantly cite third-party estimates.

Secondly, the track record of the company has been awful. Even if we look past the loss-making history, the company has been a perpetuating cycle of bad news. Nanoco has previously explored strategic alternatives – in November 2019, they similarly tried to find a bidder but by May 2020 had given up on the back of the pandemic.

What makes this time any different? New management, new Board members, a better plan are all fair arguments, but the market has good reason to be sceptical. If this plan doesn't go through, Nanoco will somehow need to secure a miracle fundraising or enter administration.

Business Overview

Nanoco Group plc, a spinout from the University of Manchester, is a UK-based technology company specialising in the research, development, manufacturing and licensing of advanced nanomaterials.

Nanomaterials are any material that has a dimension or structure measured at the nanoscale, typically 10,000 - 100,000x narrower than human hair (1–100 nm).

Nanomaterials have unique optical, electrical and mechanical properties which can enhance light absorption, emission, strength, reactivity and conductivity.

Quantum dots are a subclass of nanomaterials whose optical and electronic properties depend on their size, shape and composition. Quantum dots are extremely small semiconductor particles that can emit very pure colours of light when illuminated or electrically stimulated. Quantum dots have special optical and electronic properties that change depending on their size. This makes them valuable in a range of applications, especially where precise control of light or colour is needed.

Nanoco is best known for its work on *cadmium-free quantum dots* (CFQD®). Unlike traditional quantum dots, which often use cadmium (a toxic heavy metal), CFQDs are engineered without cadmium, making them safer and more environmentally friendly.

Really, Nanoco has access to two principal markets:

1. Displays and Electronics

Quantum dots are used in modern TV screens, monitors and other displays to create more vibrant, accurate colours and improve energy efficiency. Nanoco's CFQD® technology is found in displays that require pure, bright colours. They offer performance and clear environmental benefits.

2. Sensors and Imaging

Nanoco's HEATWAVE™ is a quantum dot material designed to enhance the capabilities of standard CMOS image sensors by enabling them to detect light in the Near-Infrared (NIR) and Short-Wave Infrared (SWIR) regions - wavelengths ranging from approximately 900nm to 1800nm and beyond.

These sensing materials can provide significant improvements over existing technologies at a competitive price point.

It can be used for:

- a. Security & Surveillance
- b. Biometric facial recognition
- c. ADAS

3. Nanoco's nanomaterials are also being explored for use in many other cases but here are a couple of examples:

- a. Solar - Nanoco has entered multiple agreements and collaborations to develop nanomaterial films and printable quantum dots for solar photovoltaic (PV) applications, aiming to improve solar cell efficiency and enable new manufacturing approaches such as printable solar inks.
- b. Bio-imaging for medical and scientific research - Nanoco is actively developing bio-compatible quantum dots (VIVODOTS™ nanoparticles) for use as fluorescent biomarkers in medical imaging and research, particularly for cancer detection and image-guided surgery

The company holds a large portfolio of patents, including a unique “molecular seeding” process that allows them to produce quantum dots efficiently and at high quality.

There are 4 main streams of revenues:

1. Products - Nanoco’s facility has the capacity to make high volumes of CFQD® quantum dots and HEATWAVE® nanomaterials for IR sensing applications. The capacity can be scaled by adding additional shifts with the overall potential return on the asset base benefiting from operational leverage if extra shifts and volumes are added. (Revenue potential: > £10m/annum.)
2. Royalties - As well as the ability to make and sell materials directly to customers, the agreements with Nanoco’s channel partners allow them to manufacture or distribute their materials themselves and pay a royalty on the value of their sales to their customers. (Revenue potential: < £10m/annum.)
3. Services - Nanoco R&D teams can design, develop and scale new materials for customer-specific applications and charge customers for professional services when they carry out these sorts of development activities for them (rewards often linked to achieving technical milestones). (Revenue potential: < £5m/annum.)
4. Licences - When a channel partner acquires a right of access to Nanoco IP, it typically pays a one-off licence fee, reflecting the costs previously incurred by Nanoco in developing its IP. (Revenue potential: < £5m/annum.)

Recent Developments

The Board has a clear vision for Nanoco's trading business. They aspire to be the "go-to" manufacturer of quantum dots and by focusing on core competencies, they play to key strengths. The group continues to expand its commercial offering CFQD® into a range of dot-based nanomaterials for sensing.

At the end of the prior year, the group carried out a capital reduction that was approved by the High Court in England to eliminate the share premium and capital redemptions reserves. This increased the group's distributable reserves and allowed the return of capital below to take place.

Post FY24, Nanoco took steps to rationalise the group's cost base. This included reducing headcount, reducing the cost and size of the Board during FY25 and reducing non-critical operating costs across the group. These measures are expected to reduce the group's annualised cash cost base by £2.6 million (or 34%) on a like-for-like basis compared to the Q4 FY24 run rate.

In October 2024, the Board appointed CDX Advisors LLC as its financial adviser to sell the trading businesses of Nanoco. The rationale for this decision was clear:

1. As discussed, there is significant value of the operating business not recognised by the market.
2. Substantial costs of being a small-listed entity (£362k in auditors' remuneration alone in 2024).
3. Operating business will benefit from the backing of a larger entity

Sensing

Completed Year 1/ 2-year Joint Development Agreement (JDA) with the Asian Chemical customer and met all the performance requirements. As a result, the customer confirmed their commitment to the project and they are now developing the scope of Phase 2 of this JDA, scheduled to formally commence in the Autumn of 2025.

Completed a comprehensive market screening for other QD-SWIR opportunities and down-selected c.10 companies as business development targets for this technology. Are already engaged with half of this group and in the process of establishing relationships with the rest.

Display

Engaged with several Asian companies involved in existing Liquid Crystal Display technologies. Due to the growing trend of substituting cadmium-based products with Cd-free, Nanoco see a near-term opportunity to introduce Nanoco cadmium-free QDs into these established supply chains. Their engagement is at different points of the supply chain, including both display manufacturers and component (QD film) makers.

In April 2025, Nanoco announced a Joint Development Agreement with a new second Asian customer. The target of the one-year programme is to optimise lead-free nanomaterials to be incorporated into global electronics applications. Once successful, the subsequent stage will involve scale up to industrial production levels during 2027. The revenue from the JDA will help the Group exceed current expectations for non-license revenue in FY25 and FY26.

Valuation (Private Market Value)

When initially looking at what a business could be sold for, it makes sense to look at the shareholders equity figure. However, in this case, Nanoco have a negative equity of £18.6m, primarily due to a large noncurrent deferred revenue line item of £34.6m. The footnotes will write that it relates to “upfront license fees” but the reality is that this item came from the Samsung litigation.

Judgement was required in reviewing the terms of the licence agreement with Samsung ... The Directors reviewed the contract in detail and analysed the terms against the specific requirements of IFRS 15 ... concluded that the group had an ongoing performance obligation in regard to the licence and therefore the revenue should be recognised over time... appropriate period for revenue recognition was the average remaining life of the relevant IP of 8.8 years.

This, of course, is “accounting fiction” and a way of recording a transaction. There is no real liability to Nanoco that results in “cash” obligations. Therefore, we can adjust book value up to £22m.

Furthermore, we can say that the intangible assets of Nanoco are understated on the balance sheet. Nanoco have over 250 patents according to management at the interims (YE 2024: 366 patents AND patents pending) and at YE 2024, Nanoco had accumulated losses

available to carry forward against future trading profits of £30.0 million – a figure that must have some value to a seller.

Most recent management updates suggest (gross) cash burn is about £0.5m/month or £6m/yr. This means that by the time the sale takes place, cash on the balance sheet will have been materially run down. Conservatively, if assume between now and the “point of sale” (maximum of 15 months) Nanoco burn £10m – meaning we adjust TEV to c.£13m.

However, the financial reality is that Nanoco’s revenues are worsening when you back out noncash license revenue from the Samsung litigation.

In H1 2025, “cash” revenues totalled £0.4m. Free cash flow totalled £(4.2)m meaning that Nanoco were burning £700k/month. Recall that management are saying that “gross cash burn” will reduce to £0.5m/month in H2. I would rather err on the side of caution and not bake this into any internal models I use since it’s quite a step up in stemming the bleeding of cash.

Given the Samsung precedent and 366 patents, it’s reasonable to assume a buyer focuses on IP optionality over operating cash flow– which is our edge given that the market isn’t approaching it that way.

As part of this process, the Company commissioned an external valuation exercise of the value of its investment in its subsidiaries, within which the Group’s intellectual property resides. The valuation report received by the Company supports the carrying value of £46 million as reported in the Company’s balance sheet contained in the Group’s Annual Report and Accounts for the year ended 31 July 2024.

Commenting on the external valuation exercise, Dmitry Shashkov, CEO of Nanoco, said:

“... The independent valuation exercise has confirmed that there is significant value in the Company’s intellectual property, it is important to be clear that this is an accounting exercise... Realising this value for shareholders will depend on a number of factors, producing a range of outcomes and valuation scenarios... we are working hard to ensure that we protect this valuable IP against potential infringers while exploring other strategic options.”

The corresponding footnote reads:

*Accounting standards require investments in subsidiary undertakings (equity and loans) to be carried at the lower of cost or recoverable value. Recoverable value is defined as the higher of fair value less costs of disposal (effectively net sale proceeds) and value in use... the Directors have concluded that the reduction in market capitalisation of the group as a result of the tender offer and buy-back constitutes an indicator of impairment. As such, a valuation exercise was **performed by an external party to assess the value of the trading companies** and it was concluded that **recoverable amount was the value in use of £46,473,000**. As a result, the Company has recognised an impairment reversal of £3,816,000 in the year. **This reversal primarily relates to the increased maturity of the markets in which the group operates and consequently higher returns from strategic income streams.***

That's the first real proxy we have to "value" the IP of Nanoco. Against the current mkt cap plus the cash (less cash burn), we arrive at a TEV of just under £60m for Nanoco. That's significantly higher than current prices! Then, factor in "synergies" and strategic bids may land even higher.

However, recall the auditor fees from earlier. A potential red flag was they increased from £162k in 2023 to £362k in 2024 (inc a working capital review of £100k). Perhaps they were "tempted" into being more relaxed with their assumptions. Indeed, a "Key Audit Matter" related to Impairment of Investment in subsidiaries.

The valuation of the Investments in subsidiaries is based on the value-in-use calculation which represents the recoverable amount being higher than the fair value less cost to sell. Management's assessment was performed with the assistance of a third-party valuation's expert. Based on the value-in-use calculated of £46.5m, a reversal of previously recognised impairment charge of £3.8m was recognised. The value-in-use calculation is subjective due to the inherent uncertainty involved in estimating and discounting future cashflows. The key assumptions used in the calculation included the forecasted cashflows, the strategic operating period and the discount rate of 18.5% (2023: 19.7%). Estimation uncertainty ... has increased due to historical impairment recognised and the loss in the year which constitutes an indicator of impairment.

The discount rate is derived from a calculation using the CAPM to calculate cost of equity utilising available market data. The discount rate is compared to the published discount rates

of comparable businesses and relevant industry data prior to being adopted. Based on the base case VIU calculated, a reversal of previous impairment losses was identified, leaving a carrying value of £46.5 million (2023: £41.7 million).

Whilst there is a potential “red flag” here – i.e carrying values increase just as the company is setting itself up for sale – given all the above, I don’t think this is a reason to get particularly bearish. Just an added reason to be cautious.

Litigation

Whilst it’s true that litigation is more on the speculative side, it’s material and core to the Nanoco valuation. IP is a legitimate asset but often gets overlooked because, rarely, do competitors/customers infringe.

To fully appreciate just how valuable this is, we must look back to the Samsung litigation and how it turned out.

In early 2020, Nanoco Technologies approached GLS Capital to finance its ongoing litigation. They claimed that Samsung’s QLED televisions were allegedly infringing on several fundamental Nanoco patents related to the synthesis and use of quantum dots. The challenge that Nanoco faced was that with their annual revenues of less than £5 million, they had no way to enforce their patents against a much larger adversary.

GLS financed Nanoco in the Nanoco Technologies, Ltd. v. Samsung Electronics Co., Ltd litigation in U.S. District Court. On January 6, 2023, the day before trial was to begin in US District Court, Nanoco announced that a term sheet for settlement of the litigation had been agreed to. On February 3, 2023, terms were made public that Samsung agreed to pay Nanoco Technologies a \$150 million settlement, which includes a license agreement and the transfer of certain patents.

The claim of “wilful” infringement alleges that LG both infringed on Nanoco’s IP and was aware that it was doing so. In patent infringement cases in the US, the wilful infringement of intellectual property typically results in a multiplier on any damages awarded by a judge.

I have yet to find any commentary on the litigation and don’t have access to the documents to read yet. However, potential bidders will likely be “in the know” and will surely assign some sort of monetary figure to the outcome.

It is also worth understanding that Samsung was only the tip of the iceberg. LG is just another step. Management is clear that companies pursuing cadmium-free quantum dot technologies in the display market are likely to be infringing. This leaves a list of companies that Nanoco *could* go after including Apple (I've refrained from mentioning others since Nanoco management have also not mentioned others but a google search suggests others could be in trouble, too).

Management & Strategy

To drive commercialisation and the execution of the sale, Dmitry Shashkov was appointed CEO of the Group on 22 October 2024. Dmitry's appointment was then reinforced by the appointments of Jalal Bagherli as Non-Executive Chairman and the non-board appointment of Jai Subramanian as Global Business Director.

Quite quickly, the new CEO and Chairperson got themselves aligned – in December, Chairman Jalal Bagherli bought 1.965m shares @ 13p – about £250k – and CEO Dmitry Shashkov bought £1.7m at a similar price – about £220k.

Furthermore, management were granted 3.2m shares under LTIP with the footnote reading -

*Having regard to the CDX process referred to in the preliminary results announcement of 20 November 2024, the Directors consider that the performance condition is commercially sensitive. **However, in the view of the Remuneration Committee, the targets are set at an appropriately stretching level.** Further information will be included in the Directors' Remuneration Report for the year ending 31 July 2025 – which will be released in November 2025.*

If we double tap at the new team, we have Dmitry Shashkov – a leader with a track record. Most recently, he was at Exyte where he led a portfolio of 8 businesses with 18 manufacturing and service locations in the US and Europe, grew revenue 3x and profitability 4x over 3 years ('20-'23) and executed 3 acquisitions. He seems to have a “fast” tenure at each place he goes – 6 different companies (CPS, Exogenesis, HC Stark, Honeywell, McKinsey) in 24 years. I don't view this statistic as a negative given the nature of this situation.

Jalal Bagherli has an even better track record – most notably, he was previously CEO of Dialog Semiconductor PLC from 2005 (making losses of over \$25m/annum) to 2021 (when it was making profits in the hundreds of millions and acquired for close to \$6b).

As for Jai Subramanian, I think Dmitry Shashkov has courted one of his trusted advisors. Both were at HC Stark ('10-'16, '13-'17) at roughly the same time and Jai Subramanian had the role of Global Business Director, whereas Dmitry Shashkov was President and CEO, Fabricated Products. It's also worth mentioning that Jai left Soleras Advanced Coatings (as Global Business Director), a company with c.4x the employee count, after 8 years to come to Nanoco.

All of this begs the question, what are such exceptional people doing at Nanoco – an £18m nanocap - if they don't believe there's at least some money to be made? Answer: the simplest conclusion is probably the correct one.

The Board continually state that any surplus cash should be returned to shareholders, rather than being retained for any purpose. This aggressive, clear wording gives me confidence.

Risks

Risks here are quite intuitive. Whilst this has to opportunity to reflect a “special situation,” the potential for loss is still very real.

1. Management cannot find a buyer as Nanoco continue to bleed cash. That's exactly why the stock hasn't really moved up. The longer it takes, the more cash Nanoco bleed, the more they're likely to need a capital raise, the a buyer thinks “why not buy them out of administration?” In the event of “no sale” it is certain Nanoco shares will crumble for the simple reason that they're a loss-making company with no ability to scale fast. But that's the risk the investor must take here. To be clear, this is a “special situation”, but not one you can simply YOLO into. Investors must be very careful to not get greedy chasing excess returns.
2. Aggressive accounting masks reality.

Catalysts

1. Management receives bids for the company. (Gathering Indications of Interest (Iol) during Q2 of calendar year 2025. Final Agreement negotiation in Q3 2025.)
2. Other litigation/settlements – management have hinted that there are a few “infringers.”

Conclusion

Nanoco is a cash-rich, IP-heavy nanotech company that's actively up for sale - and the market isn't pricing that in.

You're risking a low-valuation stub in return for a potential multibagger outcome if a sale materialises. This is essentially a bet on execution: management needs to close a deal before the cash runs out (conservatively, two years runway).

Yes, this could go to zero - but you're risking ~10p/share (with plenty of time to jump ship and avoid suicide) for the possibility of 15p+ in an M&A scenario. For investors who understand how to play binary outcomes and illiquidity, this is a classic special situation.

NOTE: There is probably an even more intelligent, lower risk way to play this with options. I just haven't figured that out.