

# Investing in growth...

Interim Report
For the six months ended 31 January 2012

# Review

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Nanoco Group plc (AIM: NANO), a world leader in the development and manufacture of cadmium-free quantum dots and other nanomaterials, is pleased to announce its interim results for the six months ended 31 January 2012.

# Highlights for the period

- US\$1m milestone payment for achieving specification targets for green quantum dots including a 50,000 hour performance life
- Joint development agreement signed with one of the world's largest lighting companies for use of Nanoco quantum dots in general lighting
- Further agreement signed with Tokyo Electron in the next phase of development of a nanomaterial-based solar film
- → Joint development agreement signed with major Asian electronics company for the use of Nanoco quantum dots in the LED backlighting of LCD displays
- → Manufacturing scale-up continued with planning permission granted for the Kilo Lab facility at Runcorn
- $\rightarrow$  Cash, cash equivalents and deposits as at 31 January 2012 of £14.4 million (31 July 2011: £17.1 million)

# Chairman's and Chief Executive Officer's Joint Review

#### Overview

During the six months to 31 January 2012 we continued with our transition from a research-based company to a high-tech manufacturing business capable of producing commercial quantities of cadmium-free quantum dots (CFQD™), which are free of any heavy metals and do not use rare earth elements, for multiple customer applications. We made progress in all of the key areas of our business including commercial relationships, company infrastructure, manufacturing scale-up and protection of our growing intellectual property estate.

A particular highlight of the period was signing our first commercial relationship in general lighting. This relationship, with one of the world's largest lighting companies, is focused on combining Nanoco's quantum dots with LEDs to create LEDs with optimal colour characteristics for general use, such as in homes and offices. The relationship is also significant in that it marks the Company's first major agreement to be signed in the USA.

Another key highlight during the period was receiving the US\$1 million milestone payment from a Japanese customer for achieving the customer's performance criteria for green quantum dots, including a service life of at least 50,000 hours.

The bespoke green quantum dots are designed for use with LEDs for backlighting LCD displays and for solid-state lighting in the home. The 50,000 hour service life, which is equivalent to almost six years of non-stop use, gives an indication of the potential of LEDs – such lighting units would consume less electricity than traditional lighting and the units would rarely need to be replaced.

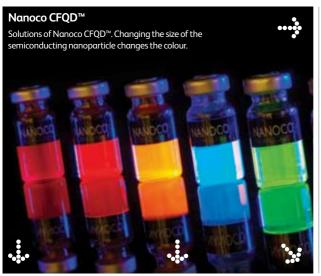
Whilst the advantages of LEDs over traditional lighting – including long service life, reduced power consumption, compact size and shock resistance – have been recognised for some time, the widespread adoption of LEDs has been limited by their colour performance. LEDs tend to produce a rather harsh, bluish white light which is unsuited to an office or home environment. Nanoco's quantum dots have been shown to overcome this limitation, creating a major opportunity for the Company.

We have made good progress across all of our commercial collaborations and we were pleased to announce a follow-on agreement with Tokyo Electron, the Japanese equipment supplier for whom we are developing a nanomaterial-based solar ink. In addition, and just two weeks after the period end, we announced a new collaboration with a major electronics company in Asia to use our quantum dots in backlighting for LCD TVs, in a country outside of Japan.

Our business development activities are currently focused on Japan, the USA, Korea and Taiwan. In these regions, we are in discussions with multiple potential customers predominantly in our core areas of LED backlighting, LED general lighting and solar power.

We are also in discussions with customers in relation to new uses of our quantum dots in a wide variety of applications. At the current time, we are being careful to remain focused on our core areas whilst being alert to new opportunities.

We continued the development of our company infrastructure during the period and, to accommodate our increasing level of activity, we signed a lease to a further 12,500 square feet of laboratory space at our Manchester head office. We also received outline planning permission for the Kilo Lab production facility in Runcorn, on which detailed design work is currently being completed.





# General lighting

Nanoco has the potential to dramatically improve LED lighting, allowing it to be used in a myriad of applications including general lighting for homes and offices.



# **Backlighting**

Quantum dot LEDs are increasingly being seen as a replacement for traditional fluorescent (CCFL) or white LEDs for the backlighting of LCD (liquid crystal display) TVs.



# Thin film solar

Printable nanoparticles for use in low-cost, high efficiency solar cells have the potential to make substantial gains in the solar cell market.



# Other applications

Quantum dots can be used in a wide range of LED lighting applications including signage.

# Chairman's and Chief Executive Officer's Joint Review (continued)

The start of construction of the Kilo Lab facility will be timed to reflect our order book and will take approximately 18 months to build and commission. Plans are also in place, once commercial agreements have been signed, to add additional capacity through the expansion of the existing line from 25kg to 40kg and by adding further 40kg lines within the existing space.

The Nanoco team currently comprises 62 staff, most of whom are highly qualified scientists. During the six months to 31 January 2012 we recruited 4 new technical staff.

# **Commercial contracts**

Our commercial contracts have progressed well.

In our supply and licence agreement with a major Japanese corporation, we were focused during the period on successfully achieving the corporation's performance criteria for green quantum dots. As announced on 31 January 2012, we achieved this milestone, triggering a US\$1 million payment from the customer.

We are currently producing a 1kg batch of the green quantum dots, which, once produced and validated by the customer, will attract a US\$2 million payment. It is expected that the 1kg of green quantum dots will be delivered during the current half year.

In April last year, Nanoco received a US\$2 million payment from the corporation for 1kg of red quantum dots. This was a major technical breakthrough, and a world first in that quantum dots had never before been manufactured in this batch size.

The intention of this major Japanese corporation is to combine the bespoke red and green quantum dots with blue LEDs to produce a highly efficient source of white light for multiple applications, for use in both general lighting and in backlighting LCD displays.

We have made significant progress with one of the world's largest lighting companies in producing a high quality, low cost product for the general lighting market. The potential size of the general LED lighting market is very exciting. We believe that this market potential will be significantly enhanced by the incorporation of our quantum dots into LED lights making quality of light on a par with alternative, higher energy usage products.

Our development work, under an agreement with a major Japanese electronics company, on quantum dot based backlights for LCD TVs is continuing. We are currently working with our partner to determine the optimum method to physically integrate our quantum dots into their displays with the least disruption to their existing manufacturing process while gaining the optimum optical performance. Whilst it is difficult to predict the exact timing and scale of orders, our current analysis suggests commercial shipments of materials for this application will commence in 2013.

There is considerable interest in the use of quantum dots in LCD TVs because they have the potential to offer the improved colour performance equal to that of organic light-emitting diode (OLED) technology. Display makers, which have already invested in substantial LCD manufacturing capacity, are keen to be able to improve the quality of the displays manufactured using their existing LCD manufacturing lines.

In the first two weeks of the current half, we were delighted to announce a new joint development agreement with a major electronics company in Asia. The agreement is in connection with the use of our quantum dots in the electronics company's display products. The global electronics company is based outside of Japan and therefore increases the number of countries in which we have contractual agreements.

Our development work with Tokyo Electron, the major Japanese equipment supplier, to create a bespoke solar ink using cadmium-free nanoparticles is proceeding well. In October 2011, we were delighted to sign a further agreement with Tokyo Electron under which we are focusing on further improving the performance of the photovoltaic ink in terms of its efficiency of electrical conversion, its cost and its ease of printing.

# **Scaling up production**

Our production facility at The Heath Technology Park in Runcorn comprises two fully commissioned Semi-Tech lines with the capacity to produce around 25kg of quantum dots annually. We are currently using the lines to produce the 1kg batch of green quantum dots for the major Japanese corporation referred to above.

The next stage of the scale-up plan is the installation of Kilo Lab equipment, which would increase total capacity to around 150 to 200 kg annually. We received outline planning permission for the Kilo Lab facility, which would be constructed at The Heath Technology Park, in December 2011 and are currently finalising the detailed design. As previously stated, it is intended to begin construction only when justified by visibility in our order book.

#### **Financial results**

Revenues in the six months to 31 January 2012 were £1.32 million (H1 2011: £1.14 million) and the loss before tax was £2.36 million (H1 2011: loss of £1.65 million). At this stage in the Company's development, revenues are primarily a reflection of the amount and timing of milestone and joint development payments from strategic partners.

Cost of sales increased over the prior year period partly as a consequence of the increase in joint development programmes. Administrative expenses have increased as a consequence, primarily, of: new technical staff in support of the joint development projects, higher patent related costs, costs of designing the Kilo lab and the additional costs associated with the semi-tech plant at Runcorn, which was commissioned in January 2011.

Statutory cash, cash equivalents and deposits, at 31 January 2012 were £14.4 million (31 January 2011: £3.8 million; 31 July 2011: £17.1 million). Both cash and costs continue to be prudently and tightly managed.

#### Outlook

Our transition from a research-based company to a commercially focused, high-tech manufacturing business continues apace. Our existing commercial agreements are proceeding well and we continue in discussions with further potential customers. We are now working to deliver a 1kg batch of green quantum dots for a Japanese customer, attracting a US\$2 million milestone payment.

While it is difficult to predict the exact timing and scale of orders, we continue to expect that commercial production will commence during the 2012/13 year and look forward to the future with confidence.

**Peter Rowley** 

Non-Executive Chairman 26 March 2012

Peter Rove

Michael Edelman

Chief Executive Officer 26 March 2012

# Consolidated Statement of Comprehensive Income

For the six months ended 31 January 2012

	Six months to	Six months to	Year to
			31 July 2011
	(Unaudited)	(Unaudited)	(Audited)
Notes	£'000	£'000	£'000
2	1,321	1,140	2,642
	(597)	(475)	(1,085)
	724	665	1,557
	(3,242)	(2,335)	(4,942)
	(2,363)	(1,566)	(3,232)
	(155)	(104)	(153)
	(2,518)	(1,670)	(3,385)
	158	28	180
	(4)	(5)	(10)
	(2,364)	(1,647)	(3,215)
3	343	271	723
/e			
	(2,021)	(1,376)	(2,492)
4	(1.00)p	(0.75)p	(1.30)p
	2 3	31 January 2012 (Unaudited) Notes £'000 2 1,321 (597) 724 (3,242) (2,363) (155) (2,518) 158 (4) (2,364) 3 343 /e (2,021)	31 January 2012 (Unaudited) (Unaudited) (Unaudited) (Unaudited) £'000 2 1,321 1,140 (597) (475) 724 665 (3,242) (2,335)  (2,363) (1,566) (155) (104) (2,518) (1,670) 158 28 (4) (5) (2,364) (1,647) 3 343 271  /e (2,021) (1,376)

# Consolidated Statement of Changes in Equity

For the six months ended 31 January 2012

	Issued	Share-based			
	equity	payment	Merger	Revenue	Total
	capital	reserve	reserve	reserve	equity
	£'000	£'000	£'000	£'000	£'000
At 1 August 2010	12,351	333	(1,242)	(3,588)	7,854
Loss for the six months					
to 31 January 2011	_	_	-	(1,376)	(1,376)
Issue of share capital	290	-	-	-	290
Share-based payments	-	104	_	_	104
At 31 January 2011	12,641	437	(1,242)	(4,964)	6,872
Loss for the six months					
to 31 July 2011	-	-	_	(1,116)	(1,116)
Issue of share capital	15,305	_	_	(432)	14,873
Expenses of placing	(519)	-	-	-	(519)
Share-based payments	-	49	-	-	49
At 31 July 2011	27,427	486	(1,242)	(6,512)	20,159
Loss for the six months					
to 31 January 2012	-	-	-	(2,021)	(2,021)
Issue of share capital	53	-	-	_	53
Expenses on issue of shar	es (10)	_	_	_	(10)
Share-based payments	-	155	_	_	155
At 31 January 2012	27,470	641	(1,242)	(8,533)	18,336

# **Statement of Financial Position**

As at 31 January 2012

	31 January 2012 (Unaudited) £'000	31 January 2011 (Unaudited) £'000	31 July 2011 (Audited) £'000
Assets			
Non-current assets			
Tangible fixed assets	2,804	3,244	3,153
Intangible assets	949	692	828
	3,753	3,936	3,981
Current assets			
Inventories	67	42	80
Trade and other receivables	1,451	386	407
Income tax asset	924	685	581
Short-term investments and cash on deposit	9,838	_	12,015
Cash and cash equivalents	4,558	3,793	5,084
	16,838	4,906	18,167
Total assets	20,591	8,842	22,148
Liabilities			
Current liabilities			
Trade and other payables	1,939	1,461	1,641
Financial liabilities	63	63	63
	2,002	1,524	1,704
Non-current liabilities			
Financial liabilities	253	317	285
Deferred tax liability	_	129	_
	253	446	285
Total liabilities	2,255	1,970	1,989
Net assets	18,336	6,872	20,159
Capital and reserves			
Issued equity capital	27,470	12,641	27,427
Share-based payment reserve	641	437	486
Merger reserve	(1,242)	(1,242)	(1,242)
Revenue reserve	(8,533)	(4,964)	(6,512)
Total equity	18,336	6,872	20,159

Approved by the Board and authorised for issue on 26 March 2012.

# **Colin White**

Director



# **Cash Flow Statement**

For the six months ended 31 January 2012

	Six months to	Six months to	Year to
	31 January 2012	31 January 2011	31 July 2011
	(Unaudited)	(Unaudited)	(Audited)
	£'000	£'000	£'000
Loss before interest and tax	(2,518)	(1,670)	(3,385)
Adjustments for:			
Depreciation of tangible fixed assets	423	289	734
Amortisation of intangible assets	58	41	87
Share-based payments	155	104	153
Changes in working capital :			
Decrease/(increase) in inventories	13	(24)	(62)
(Increase)/decrease in trade and other receivables	(1,044)	198	279
Increase/(decrease) in trade and other payables	298	(349)	352
Cash outflow from operating activities	(2,615)	(1,411)	(1,842)
Interest paid	(4)	(5)	(10)
Research and development tax credit received	_	87	514
Net cash outflow from operating activities	(2,619)	(1,329)	(1,338)
Cash flows from investing activities:			
Purchases of tangible fixed assets	(74)	(730)	(1,605)
Purchases of intangible fixed assets	(179)	(117)	(299)
Decrease/(increase) in cash placed on deposit	2,177	2,000	(10,015)
Interest received	158	28	78
Net cash inflow/(outflow) from investing activities	2,082	1,181	(11,841)
Cash flows from financing activities:			
Net proceeds from the issue of ordinary share capital	53	290	15,163
Expenses on issue of shares	(10)	_	(519)
Loan repayment	(32)	(31)	(63)
Net cash inflow from financing activities	11	259	14,581
(Decrease)/increase in cash and cash equivalents	(526)	111	1,402
Cash and cash equivalents at the start of the period	5,084	3,682	3,682
Cash and cash equivalents at the end of the period	4,558	3,793	5,084
Monies placed on deposit	9,838	_	12,015
Cash, cash equivalents and deposits at the end of the period	14,396	3,793	17,099

# **Notes to the Interim Financial Report**

For the six months ended 31 January 2012

# 1. Accounting policies

#### **Basis of preparation**

The accounting policies adopted in this interim financial report are consistent with those followed in the preparation of the Group's annual report and accounts for the year to 31 July 2011. The interim financial information for the six months ended 31 January 2012 and 31 January 2011 is unaudited and does not constitute statutory accounts as defined in the Companies Act 2006. This interim financial report includes audited comparatives for the year to 31 July 2011. The 2011 annual report and accounts received an unqualified audit opinion and has been filed with the Registrar of Companies. This interim financial report has been prepared in accordance with International Financial Reporting Standards (IFRS) as adopted by the European Union and has been prepared under the historical cost convention.

#### Basis of consolidation

This interim financial report consolidates the financial statements of Nanoco Group PLC and the entities it controls (its subsidiaries).

# 2. Segmental information

### Operating segments

The Group operates as one business segment, providing high performance nano-particles for research and development purposes. This is the level at which operating results are reviewed by the chief operating decision maker (i.e. the CEO) to make decisions about resources, and for which financial information is available. All revenues have been generated from continuing operations and are from external customers.

	Six months to	Six months to	Year to
	31 January	31 January	31 July
	2012	2011	2011
	£'000	£'000	£'000
Analysis of revenue			
Products sold	101	71	194
Rendering of services	728	748	1,351
Royalties and licences	492	321	1,097
	1,321	1,140	2,642

# Geographical information

The Group operates in four main geographic areas, although all are managed from the UK. The Group's revenue per geographical segment is as follows:

	Six months to 31 January 2012 £'000	Six months to 31 January 2011 £'000	Year to 31 July 2011 £'000
Analysis of revenue			
UK	94	_	-
Europe (excluding UK)	96	92	200
Asia	1,086	1,048	2,397
USA	45	_	45
	1,321	1,140	2,642

All the Group's assets are held in the UK and all of its capital expenditure arises in the UK.

#### 3. Tax

The tax credit of £343,000 recorded in the consolidated statement of comprehensive income for the six months ended 31 January 2012 (£271,000 for the six months ended 31 January 2011) is in respect of a research and development tax credit receivable. The tax credit of £723,000 for the year ended 31 July 2011 is in respect of a research and development tax credit receivable of £594,000 and a deferred taxation charge reversal of £129,000.

#### 4. Loss per share

4. Loss per share			
	31 January	31 January	31 July
	2012	2011	2011
	£'000	£'000	£'000
Loss for the financial period			
attributable to equity shareholders	(2,021)	(1,376)	(2,492)
Share-based payments	155	104	153
Loss for the financial period before			
share-based payments	(1,866)	(1,272)	(2,339)
Weighted average number of shares:	No.	No.	No.
Ordinary shares in issue	202,199,473	183,137,569	192,142,536
Adjusted loss per share before			
share-based payments (pence)	(0.92)p	(0.69)p	o (1.22)p
Basic loss per share (pence)	(1.00)p	(0.75)p	(1.30)p

Diluted loss per share has not been presented above as the effect of share options issued is anti-dilutive.

#### 5. Interim financial report

A copy of this interim financial report will be distributed to shareholders and is also available on the Company's website at www.nanocotechnologies.com

# **Notes**

# **Investor Information**

**Directors** 

Dr Peter Rowley

(Non-Executive Chairman)

Dr Michael Edelman

(Chief Executive Officer)

Dr Nigel Pickett

(Chief Technology Officer)

Mr Colin White

(Chief Financial Officer)

Mr Michael Bretherton

(Non-Executive Director)

Mr Gordon Hall

(Non-Executive Director)

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(Non-Executive Director)

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Registrars

The Company's share register is maintained on our behalf by Capita Registrars. Capita are responsible for updating the register, including changes to shareholders' addresses, purchases and sales of the Company's shares. If you have any questions about your shareholding or need to notify any changes to your personal details please contact them:

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