

HAYDALE GRAPHENE INDUSTRIES PLC (HAYD.L)

The Tipping Point

MATURING NANOMATERIALS MARKET

The nanomaterials market is transitioning from a concept technology to commercial applications. Haydale (HAYD.LON) specialises in the integration of nanomaterials into commercial and industrial technologies. We argue that this is a good position to occupy within the value chain – exposed to end market growth but not exposed (negatively) to the likely future price compression in raw graphene or other nanomaterials.

Major applications for Haydale (HAYD.LON) include composite materials, specialty inks and coatings, and additive manufacturing (3D printing). The nanomaterials are graphene and silicon carbide, and potential others in future. We argue that these applications have now reached a tipping point from research to commercial reality (see pie charts p2).

REVENUES – STRONG GROWTH

In the trading update of July 19th, Haydale (HAYD.LON) announced that FY June 2017 total income (revenue and other) has doubled, meaning about £3.9m for the year. Based on the order backlog, and major projects under way, we expect further strong growth in the next few years. We consider two of the specific channels for further growth.

In November 2016 Haydale announced a Joint Development Agreement with Huntsman Corporation to develop graphene enhanced resins. Adding small amounts of graphene in the resin layers of materials like carbon fibre can dramatically improve (x10) the dissipation of electrical charge (aerospace applications) and heat (aeros and autos). The deal with Huntsman potentially dramatically accelerates Haydale's penetration of this market.

Secondly, Haydale's progress into Asian markets should benefit, in our view, from a couple of developments – the September 2016 acquisition of Innophene in Thailand, and the February 2017 collaboration agreement with Everpower International Holdings. Opportunities in Asia include specialty inks for bio-sensors, various composite materials, and additive manufacture technologies.

In this report we present a snapshot of the revenue growth profile (charts on p2).

VALUATION AND DRIVERS

The shares currently trade on 5.5x EV/Total Income on our FY June 2018 forecast, which is not unusual for an early stage growth stock. We believe that revenue growth will be the main determinant of share price performance in the next few years. Investors should track order intake as a forward indicator for revenues (see chart p2).

y/e June 30th	2016	2017e	2018e	2019e
Total income (£m)	1.9	3.9	5.9	7.8
Adj. EBITDA (£m)	-3.4	-4.0	-2.0	0.2
EPS (GBp)	-26.0	-25.0	-11.0	-1.0
Net cash/(debt) (£m)	2.9	2.0	0.0	0.2

Source: Capital Network

CHEMICALS

26/07/2017

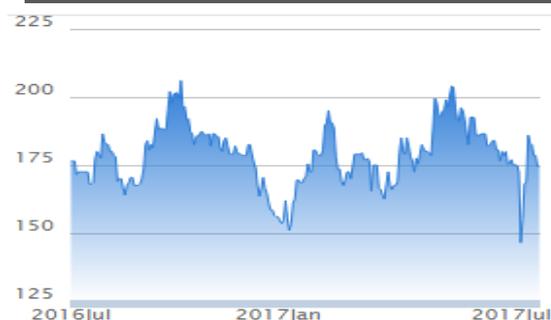
SHARE PRICE	52 WEEK LOW
▲ £1.75p	▲ £1.47p
MARKET CAP	52 WEEK HIGH
▲ £34.3m	▲ £2.14p
NAV	NET DEBT
▲ £7.8M	▲ £0.5m
<small>*as of 31st Dec 2016</small>	<small>*as of 31st Dec 2016</small>

MAJOR SHAREHOLDERS

- 1) Everpower International Holdings – 9.99%
- 2) Octopus Investments – 8.99%
- 3) Hargreave Hale – 4.77%

Shares in Issue	19.6m
Avg Volume	27.63k
Primary index	AIM
EPIC	HAYD.L
Next Key Announcement	-
Sector	Chemicals

SHARE PRICE CHART



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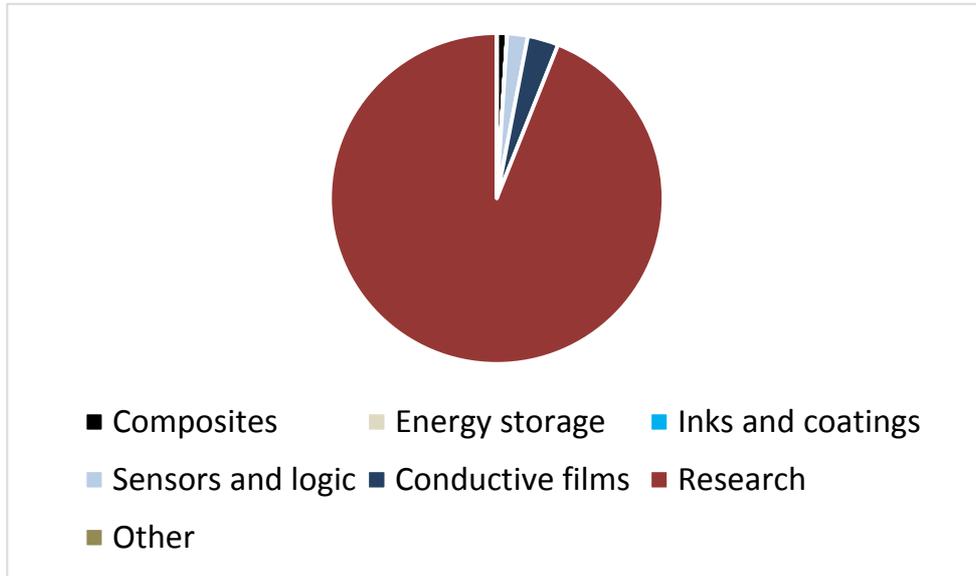
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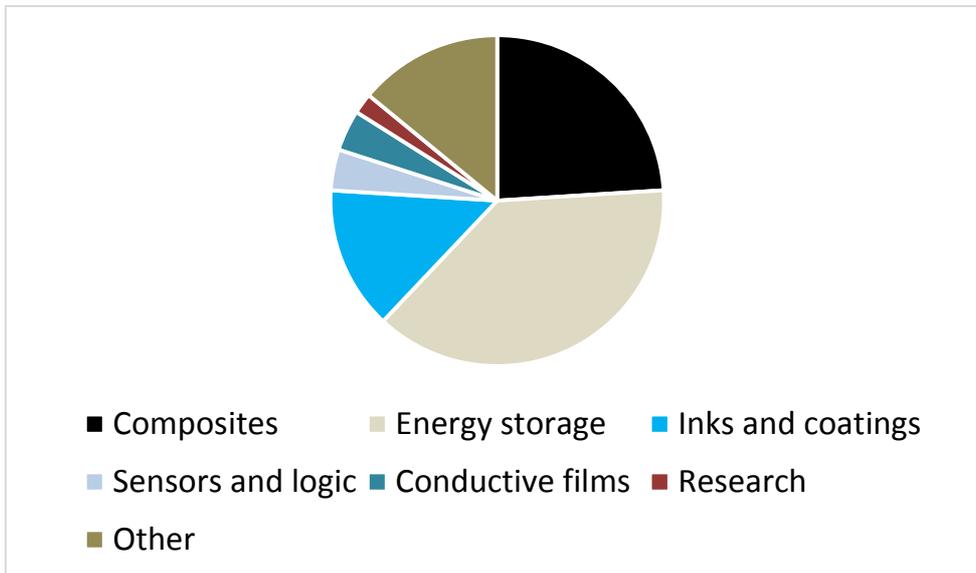
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Graphene Market 2014



Source: IDTechEx

Graphene Market 2026e



Source: IDTechEx

MATURING MARKET FOR NANO MATERIALS

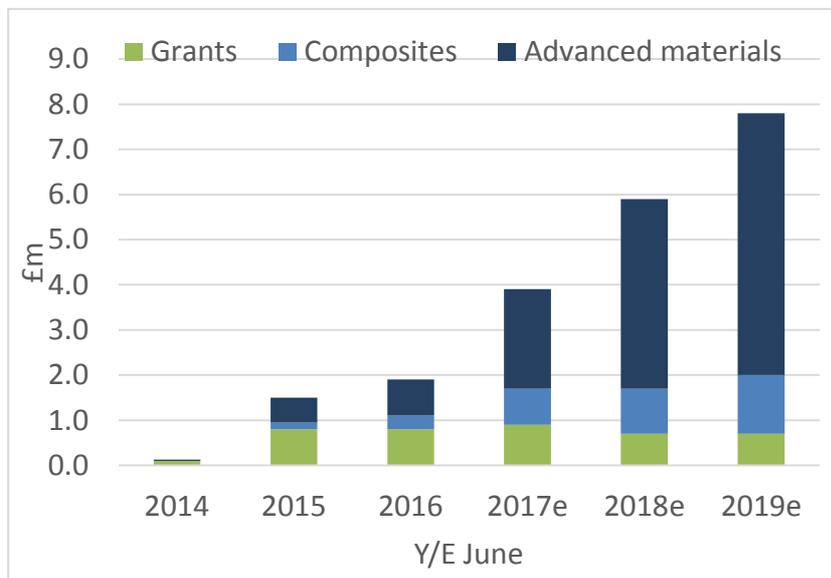
The charts above show the global market for graphene, according to industry researchers. The conclusion is that the market has reached the transition point from being a laboratory material to being a commercial material. Most relevant for Haydale are the composite materials and inks and coatings segments. In addition Haydale has growing revenues Silicon Carbide and opportunities in other nanomaterials.

HAYDALE COMMERCIAL REVENUES GROWING

The chart below left shows our forecast for the Total Income for the group in the next few years. We have broken this down according to the two Strategic Business Units – Resins, Polymers & Composites, and Advanced Materials (inks and coatings, 3D printing, other). We have separated out grant funding, which becomes a proportionally smaller part of the mix going forward. The principal source of grant funding is Innovate UK, and we expect this to continue post-Brexit, gradually becoming a smaller percentage of the total.

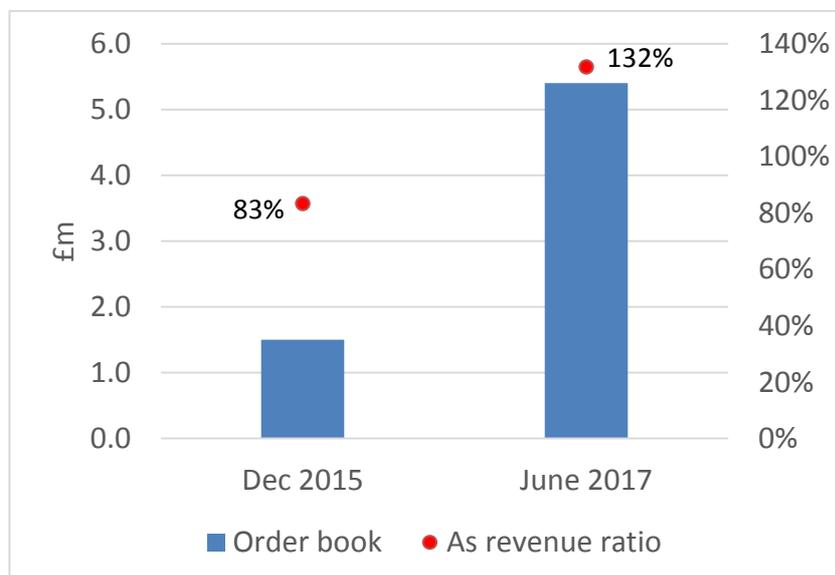
The chart below right shows the size of the firm order backlog. Encouragingly, as of the July 19th update, the backlog has grown to 132% of trailing 12m Total Income, which gives us an additional level of visibility. We'd expect the company to give regularly half-yearly updates going forward, and order book should become a useful guide for investors as to the forward growth trajectory.

Haydale Total Income



Source: Capital Network

Haydale Order Backlog



Source: Company Data

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