

# Anticipated acquisition by Thermo Fisher of the Gatan business of Roper

## Summary of provisional findings

**Notified: 17 April 2019**

1. The Competition and Markets Authority (CMA) has provisionally found that the anticipated acquisition by Thermo Fisher Scientific Inc. (Thermo Fisher) of the electron microscope peripherals business (Gatan) of Roper Technologies, Inc. (Roper) (the Proposed Merger) may be expected to result in a substantial lessening of competition (SLC) due to:
  - (a) Horizontal competition concerns in the market for the supply of DD cameras for sale in the UK;
  - (b) Potential competition concerns in the market for the supply of filters for sale in the UK;
  - (c) Vertical competition concerns, both with regard to foreclosure and information sharing in the markets for respectively the supply of GI cameras, DD cameras and filters to TEM suppliers for sale in the UK.
2. These are our provisional findings. We invite any parties to make representations to us on these provisional findings. Parties should refer to our [notice of provisional findings](#) for details of how to do this.

### ***Background***

3. On 7 January 2019, the CMA referred the Proposed Merger for further investigation and report by a group of CMA panel members (the Inquiry Group) following a phase 1 review.
4. The CMA must decide:
  - (a) whether arrangements are in progress or in contemplation which, if carried into effect, will result in the creation of a relevant merger situation; and

(b) if so, whether the creation of that situation may be expected to result in an SLC within any market or markets in the UK for goods or services.

5. This document, together with its appendices, sets out our provisional findings. We are required to come to, and report on, a final decision by 23 June 2019.

### ***The parties***

6. Thermo Fisher is a US-based corporation and manufactures a broad range of analytical instruments, scientific equipment, consumables, services and software for research, analysis, discovery and diagnostics.
7. Thermo Fisher manufactures electron microscopes (EMs) through its wholly-owned subsidiary FEI Company (FEI). Thermo Fisher supplies both transmission EMs (TEMs) and scanning EMs (SEMs) for use in life science, material science and semiconductor applications.
8. Thermo Fisher also supplies EM peripherals such as cameras and detectors, both with its EMs and separately to customers who already have a compatible Thermo Fisher EM.
9. Roper is a US-based provider of software solutions and manufacturer of technological equipment. Roper manufactures and supplies EM peripherals globally under the Gatan brand, including: filters, direct detection (DD) and general imaging (GI) cameras, detectors, and specimen preparation kits.
10. On 24 April 2018, Thermo Fisher agreed to acquire Gatan. Gatan consists of the entire share capital of several Roper subsidiaries, as well as certain other associated assets and liabilities of Roper. We refer to Thermo Fisher and Gatan as 'the Parties' or the 'Merged Entity' in this document.
11. The Proposed Merger is not yet complete and is conditional upon clearance by the CMA.

### ***Relevant merger situation***

12. We have provisionally found that arrangements are in progress or in contemplation which, if carried into effect, will result in the creation of a relevant merger situation within the meaning of the Enterprise Act 2002 (the Act).
13. We have also established that there is a sufficient nexus within the UK on a share of supply basis to give us jurisdiction to investigate.

## ***Counterfactual***

14. Before we assess the effects of the Proposed Merger, we have determined what we would expect the competitive situation to be absent the Proposed Merger - the 'counterfactual'.
15. The counterfactual is a benchmark against which the expected effects of a merger are assessed. In this case, our provisional view is, as submitted by the Parties, that the counterfactual is that of the pre-Proposed Merger conditions of competition.

## ***Our competition assessment***

16. We set out two main theories of harm in our published Issues Statement and our competition assessment has focussed on these. They are:
  - (a) Horizontal effects: we have considered the extent to which there may be a loss of competition arising from the Proposed Merger in the supply of TEM peripherals.
  - (b) Vertical effects: we have considered the extent to which the Merged Entity would have the ability and incentive to harm rivals through customer or input foreclosure, either partial or total. We have also considered whether the Merged Entity would have the ability and incentive to harm competition through the effect of information sharing.
17. We have considered the extent to which the following countervailing factors might mitigate any competition concerns we have provisionally found:
  - (a) Market entry and expansion;
  - (b) Rivalry-enhancing efficiencies arising from the Proposed Merger.

## ***Market definition***

18. Market definition provides a framework for the analysis of the competitive effects of a merger. We have considered the definition of the relevant markets in which the effects of the Proposed Merger should be assessed. We have assessed the relevant product market(s) and the relevant geographic market(s).
19. The Parties submitted that the relevant product markets are:
  - (a) the supply of filters for TEMs
  - (b) the supply of cameras for TEMs, and

- (c) the supply of TEM systems (including peripherals).
20. The Parties told us that they consider that further segmentation of these product markets would be inappropriate, particularly given the significant potential for supply-side substitution within each category.
21. Having considered both demand-side and supply-side factors, our provisional view is that filters should be treated as a single product market. We recognise that there are notable differences in the price and application of different types of filter, and in particular, that life science filters typically incorporate a DD camera. We take these points into account in our competitive assessment.
22. Our provisional view is that GI and DD cameras constitute separate product markets.
- (a) From a demand side perspective, our provisional view is that the two products are unlikely to be considered close substitutes by the majority of customers. DD cameras tend to be used for specific life science applications such as cryo-EM. The more specialised role of DD cameras is reflected in their price. Whilst some customers may view GI cameras and DD cameras as substitutes, most do not.
- (b) From the supply-side, manufacturers of GI cameras cannot rapidly shift production between the two products and few firms supply both products.
23. For TEMs, we have found that there is significant variation in the price, application and customer base between the supply of TEMs to life science customers, and the supply of TEMs to material science customers.
24. We recognise that there are some defined segments within these markets, such as cryo-EM, and that TEM prices and specifications can vary. However, we do not view these as distinct product markets. We have examined how competitive conditions vary across relevant segments in our competitive assessment, as well as constraints from within and outside each of the markets.
25. Our provisional view is therefore that the relevant product markets in which to assess the effects of the Proposed Merger are:
- (a) The supply of DD cameras.
- (b) The supply of GI cameras.
- (c) The supply of filters.

- (d) The supply of TEM systems (including peripherals) to life science customers.
  - (e) The supply of TEM systems (including peripherals) to material science customers.
26. The Parties have submitted that the relevant geographic market is worldwide for all of the relevant product markets. This is consistent with our analysis of the evidence provided to us. Accordingly, our provisional view is that the relevant geographic market for these products is worldwide.

#### *Horizontal competition*

27. We have investigated whether, due to the loss of competition between the Parties, the Merged Entity could increase the price of its products, deteriorate quality and/or reduce the supply of new products. To do this, we have assessed the closeness of competition between the Parties and the constraint imposed by current and potential rivals on them.
28. We have considered competition issues relating to the supply of direct detection (DD) and general imaging (GI) cameras, and potential competition issues.
29. We have considered horizontal competition between the Parties in terms of upstream competition (supply of peripherals to TEM manufacturers and TEM customers) and downstream (the supply of peripherals as part of TEM systems) and have provisionally found that there are some competition concerns in both respects.
30. We have considered competition at the level of each of our defined product markets, as set out below.

#### *GI cameras*

31. The Parties are the two largest suppliers of GI cameras with a combined share of [70 – 80]% of global revenue. Their products are similar, in terms of specifications and prices. There is a lack of evidence from internal documents or third-parties to indicate that Thermo Fisher and Gatan compete closely in the supply of GI cameras.
32. Our provisional view is therefore that the Proposed Merger may not be expected to result in an SLC in the market for the supply of GI cameras.

### *DD cameras*

33. Thermo Fisher and Gatan are the two largest suppliers of DD cameras. There is only one other established supplier of DD cameras (Direct Electron) and one new entrant (Quantum Detectors).
34. The evidence shows that the Parties are close competitors in the supply of DD cameras. This is supported by evidence from internal documents and third-parties. This evidence shows that competition between the Parties has driven quality improvements. These quality improvements benefit both Thermo Fisher and non-Thermo Fisher TEM users.
35. Our provisional view is that the Proposed Merger may be expected to result in an SLC in the market for the supply of DD cameras.

### *Filters*

36. Gatan supplies filters for Thermo Fisher, JEOL and Hitachi TEMs.
37. There is little competitive constraint: JEOL supplies an 'in-column' filter on some of its TEMs (that can be used for life science applications), and Hitachi and Nion both self-supply spectrometers (that can be used for certain material science applications). Evidence from internal documents and third-parties however shows that Gatan faces limited competition in the supply of filters in both life science and material science.
38. An established scientific instruments firm, CEOS, is expected to enter the filters market although it is our provisional view (based on the evidence provided to us) that this potential entry will not be sufficient to offset the impact of the Proposed Merger on competition in the supply of filters.
39. Our provisional view is that the Proposed Merger may be expected to result in an SLC in the market for the future supply of filters.

### *Vertical competition – foreclosure*

40. We have considered the degree to which the Proposed Merger may be expected to give rise to harmful vertical effects by assessing the Merged Entity's ability and incentive to engage in input foreclosure of rival TEM suppliers. We have also considered the effect that foreclosure could have on competition in the TEM market.
41. Our assessment considered these issues in the absence of the Parties' supply agreements with other TEM manufacturers before evaluating the

extent to which these agreements address any foreclosure concerns that would otherwise arise.

42. The Parties submitted that they would have no ability or incentive to foreclose downstream rivals due to the supply agreements, the ability of rivals to react and protect themselves through competing entry upstream and the threats of retaliation and reputational damage.

*Ability to foreclose*

43. Our provisional finding is that the Merged Entity would have the ability to foreclose competing TEM suppliers in relation to filters and DD cameras and to a lesser extent in relation to GI cameras. This is because these filters and DD cameras are an important part of TEM systems and Gatan has market power in the supply of these products.

*Incentive to foreclose*

44. We have also provisionally found that the Merged Entity would have a large incentive to foreclose on each peripheral.
45. The per-unit profits earned on downstream TEM system sales are greater than those earned on upstream peripheral sales. In addition, the importance of the peripherals for downstream TEM customers and the lack of effective substitutes available for filters, DD cameras and, to a lesser extent, GI cameras indicates that a large number of potential JEOL or Hitachi customers may switch their TEM system purchase to Thermo Fisher if access to Gatan's peripherals is restricted. The combination of these factors creates a large incentive to foreclose.
46. We considered the extent to which the Merged Entity's incentive to foreclose would be reduced by the risk of retaliation or reputational damage but found that they would have a very limited impact on Thermo Fisher's overall incentive to foreclose.
47. Similarly, we considered the impact of entry by JEOL, Hitachi or others in the supply of new peripherals but our provisional view is that entry or expansion would not be timely, likely and sufficient to prevent the large incentive to foreclose.

*Effect of foreclosure*

48. Our view is that both of Thermo Fisher's current established TEM supplier rivals could be significantly impacted by foreclosure of Gatan's peripherals along with any potential new entrants that require access to Gatan's products.

49. Thermo Fisher is by far the biggest supplier of TEMs supplied with filters, DD cameras and GI cameras in a concentrated market and in the presence of weak competition between suppliers, even a small lessening of competition can have a substantial impact.
50. Our provisional view is that, if Thermo Fisher's rivals were to be foreclosed, the effect would be significant harm to competition between TEM suppliers downstream. This would take the form of price increases and/or a reduction in quality and future innovation within the TEM market (both by Thermo Fisher and its current and future competitors).

#### *The Supply Agreements*

51. We have considered the extent to which supply agreements reached by the Parties with other TEM suppliers would address the foreclosure concerns identified. The Parties told us that these agreements mean that the Merged Entity would not have the ability to foreclose these rivals.
52. We consider that contractual arrangements are unlikely to completely remove the ability of a firm to foreclose its rivals. This is because contracts can be renegotiated or terminated and breaches waived. The relative bargaining power, and broader commercial considerations, of each party to an agreement will affect their incentive to agree to changes and decisions on contractual enforcement.
53. In addition, we have considered the specific terms of these supply agreements and the extent to which they remove the Merged Entity's ability to foreclose. These include: whether the terms relating to supply of Gatan products provide adequate protection against all methods of foreclosure; the extent to which compliance will be effectively monitored and enforced; whether circumvention of the agreements is a risk, given our provisional view that there is an incentive to foreclose; and the fact that the supply agreements may distort future entry into the TEM market.
54. Having considered evidence relating to all of these factors, our provisional finding is that the supply agreements are not sufficient to address fully the concern in respect of foreclosure by the Merged Entity of its rivals in the supply of TEMs.

#### *Vertical competition – information sharing*

55. We have considered the degree to which the Proposed Merger may be expected to give rise to harmful vertical effects as a result of the sharing of commercially sensitive information about rivals in the supply of TEMs by



Gatan with Thermo Fisher within the Merged Entity. This could harm competition in the supply of TEMs by allowing the Merged Entity to compete less aggressively and/or otherwise by putting rivals at a competitive disadvantage.

56. We have considered the type of information that the Merged Entity will hold and which Thermo Fisher would not have access to absent the Proposed Merger and the extent to which provisions in supply agreements with other TEM suppliers prevent the sharing of that information between Gatan and Thermo Fisher within the Merged Entity.
57. Our provisional view is that access by Thermo Fisher to commercially sensitive information related to sales and bids after the Proposed Merger, would enable it to bid less aggressively against its rivals and/or otherwise put its TEM rivals at a competitive disadvantage compared to the situation absent the Proposed Merger.
58. We have considered whether access to commercially sensitive information related to Thermo Fisher's rivals' technical product specification information and product innovation plans would allow it to harm competition in TEM markets. Having considered evidence from the Parties and third parties, our provisional view is that access by Thermo Fisher to commercially sensitive information related to technical product specification and product innovation plans after the Proposed Merger, would enable it to compete less aggressively against its rivals and/or otherwise put its TEM rivals at a competitive disadvantage compared to the situation absent the Proposed Merger.
59. We have provisionally found potential harmful vertical effects related to information sharing, and we do not consider that the terms of the supply agreements are sufficiently certain, robust or enforceable so as to address fully these effects.

### ***Countervailing factors***

60. We have considered countervailing factors that could give rise to effects with the result that there is no SLC arising from the Proposed Merger. In the present case, these are market entry and expansion and rivalry-enhancing efficiencies.

### *Entry and expansion*

61. We have considered the likely market entry and expansion by rivals to the Parties in response to the Proposed Merger and the extent to which this may mitigate the effect of the Proposed Merger on competition.
62. We have considered potential entry into the TEM and TEM peripherals market and considered the Parties' and others' views on the requirements for market entry in terms of technical knowledge, finance and the time required to develop such products. We have also considered evidence of any potential new entrants.
63. We have provisionally found that barriers to entry within the TEM market are high, and the incentives for new entry are low. Entry and expansion in the TEM market is largely dependent on access to, and integration of, peripherals and software. Our provisional finding is that entry or expansion into the TEM market would not be timely, likely and sufficient to prevent the SLCs we have provisionally found.
64. We have considered the barriers to entry and expansion in TEM peripherals. The Parties and third parties told us of the considerable technical knowledge, access to intellectual property and level of investment that would be required and the risks facing a new product being accepted in the market. The barriers to entry appear higher in the market for DD cameras than in the market for GI cameras.
65. Our provisional view is that barriers to entry in the DD market in particular are high. The current market share, product leadership and leading position of Gatan's software may also deter entry or expansion.
66. Despite high profit margins, there has been very little entry or expansion for peripherals that compete directly with the Parties' products. This would imply that, while there may be incentives for suppliers to enter or expand in the market, their ability to do so is limited.
67. Our provisional view is that market entry or expansion in TEM peripherals would not be timely, likely and sufficient to prevent the SLCs we have provisionally found.

### *Rivalry-enhancing efficiencies*

68. We have considered whether efficiencies arising from the Proposed Merger may enhance rivalry, with the result that it does not give rise to an SLC.

69. The Parties have submitted some efficiencies that they expect to arise as a result of the Proposed Merger and which they have said should be considered as rivalry-enhancing. We have considered whether these efficiencies are timely, likely and sufficient to prevent an SLC from arising, and whether they are merger specific and our provisional view on each of these is as follows:
- (a) Elimination of double marginalisation (EDM), by acquiring Gatan peripherals at cost, the Parties have told us that the Merged Entity will be able to pass cost savings onto customers in the form of lower prices. Our provisional view is that the Merged Entity will not have a strong incentive to pass these savings onto customers in the form of lower prices due to its market power and the greater importance placed on quality than price by many customers.
  - (b) Better integration of peripherals with TEMs, and reductions in the total costs of ownership of these. We have noted the Parties' intention to achieve this, but we think it is unlikely that rivals of the Merged Entity would be able to respond in a way that enhances rivalry. We also consider that Thermo Fisher may be able to achieve some of these efficiencies, absent the Proposed Merger.
  - (c) Improved maintenance and support of Gatan's peripherals by Thermo Fisher's larger service support operation. We consider that the Merged Entity would be able to achieve this efficiency, but we think it is unlikely that rivals would be able to respond in a way that enhances rivalry.
  - (d) Repositioning of existing TEM peripherals to target different customer segments at different price points, resulting in greater choice for customers. We consider that repositioning of the Merged Entity's products away from each other would reduce, rather than enhance, horizontal and vertical competition. It is also not clear why the main example of product repositioning is merger-specific, as it could be achieved absent the Proposed Merger.
  - (e) The sale of more TEMs through the above efficiencies, enabling the Merged Entity to offer cheaper and more accessible microscopes. We have not seen sufficient evidence from the Parties to substantiate this claimed efficiency.
70. We note that Thermo Fisher is the largest supplier of TEMs, and Gatan is the largest supplier of cameras and filters (excluding Thermo Fisher itself). In view of the Parties' market positions and, given that we have provisionally found that they have the ability and incentive to foreclose smaller rivals, we consider

that the claimed efficiencies are not such that they could lead to enhanced rivalry from other, smaller firms so as to prevent an SLC arising.

71. Our provisional view is that these claimed efficiencies are not timely, likely and sufficient to prevent an SLC from arising. We may consider them as relevant customer benefits, when we consider potential remedies to the SLCs we have provisionally found.

***Provisional conclusions***

72. As a result of our assessment, we have provisionally concluded that the anticipated acquisition by Thermo Fisher of Gatan will result in the creation of a relevant merger situation.
73. We have provisionally concluded that the Proposed Merger may be expected to result in an SLC due to:
- (a) Horizontal competition concerns in the market for the supply of DD cameras for sale in the UK;
  - (b) Potential competition concerns in the market for the supply of filters for sale in the UK;
  - (c) Vertical competition concerns, both with regard to foreclosure and information sharing in the markets for respectively the supply of GI cameras, DD cameras and filters to TEM suppliers for sale in the UK.