

**IN THE UNITED STATES DISTRICT COURT  
FOR THE DISTRICT OF DELAWARE**

**VERTICAL ANALYTICS LLC**

**Plaintiff,**

**v.**

**BRUKER-AXS, INC., PFIZER, INC.,  
ASTRAZENECA PLC, ASTRAZENECA  
PHARMACEUTICALS LP,  
ASTRAZENECA LP AND BRISTOL-  
MYERS SQUIBB CO.,**

**Defendants.**

**Civil Action No. 12-1187-CJB**

**JURY TRIAL DEMANDED**

**AMENDED COMPLAINT FOR PATENT INFRINGEMENT**

Plaintiff Vertical Analytics LLC ("Vertical Analytics") files this amended complaint for patent infringement against defendants Bruker-AXS, Inc., Pfizer, Inc., AstraZeneca PLC, AstraZeneca Pharmaceuticals LP, AstraZeneca LP (collectively, AstraZeneca PLC, AstraZeneca Pharmaceuticals LP, and AstraZeneca LP are "AstraZeneca"), and Bristol-Myers Squibb Co. (collectively, Bruker-AXS, Inc., Pfizer, Inc., AstraZeneca, and Bristol-Myers Squibb Co. are the "Defendants"):

**THE PARTIES**

1. Vertical Analytics is a Delaware limited liability company with its principal place of business located at 6136 Frisco Square Blvd., Suite 385, Frisco, TX 75034.

2. On information and belief, Defendant Bruker-AXS, Inc. ("Bruker") is a Delaware corporation with its principal place of business located at 5465 East Cheryl Parkway, Madison, WI 53711. On information and belief, Bruker is an operating company owned by the Bruker Corporation and has offices all over the world, including Bruker AXS GmbH, which is located in Germany. On information and belief, in 2001 Bruker acquired the analytical X-ray business of Nonius, and created Bruker Nonius BV. On information and belief, the Bruker Corporation is the parent of Bruker Nederland NV, which is located in the Netherlands.

3. On information and belief, Defendant Pfizer, Inc. ("Pfizer") is a Delaware corporation with its principal place of business located at 235 East 42nd Street, New York, NY 10017.

4. On information and belief, Defendant AstraZeneca PLC is a public limited company domiciled in the United Kingdom with its principal place of business at 2 Kingdom Street, London W2 6BD United Kingdom.

5. On information and belief, Defendant AstraZeneca Pharmaceuticals LP is a Delaware limited partnership with a principal place of business at 1800 Concord Pike, Wilmington, Delaware 19850-5437. AstraZeneca Pharmaceuticals LP may be served with process via its registered agent, The Corporation Trust Company, 1209 North Orange Street, Wilmington, Delaware 19801. On information and belief, AstraZeneca Pharmaceuticals LP is owned by AstraZeneca PLC.

6. On information and belief, Defendant AstraZeneca LP is a Delaware limited partnership with a principal place of business at 1800 Concord Pike, Wilmington, Delaware 19850-5437. AstraZeneca Pharmaceuticals LP may be served with process via its registered

agent, The Corporation Trust Company, 1209 North Orange Street, Wilmington, Delaware 19801. On information and belief, AstraZeneca LP is owned by AstraZeneca PLC.

7. On information and belief, Defendant Bristol-Myers Squibb Co. (“Bristol-Myers”) is a Delaware corporation with its principal place of business at 345 Park Avenue, New York, NY 10154.

### **JURISDICTION AND VENUE**

8. This action arises under the patent laws of the United States, Title 35 of the United States Code. This Court has subject matter jurisdiction under 28 U.S.C. §§ 1331 and 1338(a).

9. On information and belief, Defendants are subject to this Court's jurisdiction because Defendants have transacted business in this district, including, more specifically, directly and/or through intermediaries, making, using, importing, offering for sale and/or selling products and services in the State of Delaware. Defendants, upon information and belief, are doing substantial business in this District, and have directly and/or indirectly committed acts of patent infringement in this District. In addition, defendants Bruker, Pfizer and Bristol-Myers are corporations organized and existing under the laws of the State of Delaware, defendants Astrazeneca Pharmaceutical LP and AstraZeneca LP are Delaware limited partnerships, and defendant AstraZeneca PLC has subsidiaries organized and existing under the law of the State of Delaware.

10. Venue is proper in this district under 28 U.S.C. §§ 1391(b) and (c), and 1400(b).

### **JOINDER**

11. Defendants are properly joined in this action because all of the claims asserted by Vertical Analytics in this action are based on Defendants' manufacture, use, importation, offering

for sale and/or selling Bruker's D8 line of X-Ray Diffraction Analysis equipment. Accordingly, joinder is proper because (1) Vertical Analytics' right to relief is asserted against Defendants with respect to or arising out of the same transaction, occurrence, or series of transactions or occurrences, (2) numerous material questions of law and/or fact common to all Defendants will arise in this action, and (3) the facts underlying the claim of infringement asserted against each defendant share an aggregate of operative facts. *See* Fed. R. Civ. P. 20(a)(2); 35 U.S.C.S. § 299; *In re EMC Corporation*, 677 F.3d 1351, 1359 (Fed. Cir. 2012).

### **THE ASSERTED PATENTS**

12. On July 18, 2006, the United States Patent and Trademark Office ("USPTO") duly and legally issued U.S. Patent No. 7,079,621 (the "'621 patent"), entitled "Vertical Transmission Diffraction Analysis," to Erwin Blomsma and Adriaan Jan van Lengevelde, who assigned their rights and interests in the '621 patent to Avantium International B.V. ("Avantium"). A true and correct copy of the '621 patent is attached as Exhibit A.

13. On April 20, 2010, the USPTO duly and legally issued U.S. Patent No. 7,702,071 (the "'071 patent"), entitled "Method For Performing Powder Diffraction Analysis," to Erwin Blomsma and Adriaan Jan van Lengevelde, who assigned their rights and interests in the '071 patent to Avantium. A true and correct copy of the '071 patent is attached as Exhibit B.

14. Pursuant to a series of assignment agreements, Vertical Analytics is the owner of all title, rights, obligations, interests, and liabilities relating to the '621 and '071 patents (collectively, the "Asserted Patents"), including, without limitation, the exclusive right to sue for and collect past, present, and future damages and the right to all past, present, and future claims or causes of action for damages or equitable relief for infringement of the Asserted Patents.

### **FACTUAL BACKGROUND**

15. The Asserted Patents cover methods and apparatus for performing X-ray powder diffraction ("XRPD") analysis. XRPD analysis is a quick, non-destructive scientific process that is used to obtain structural information about crystalline solids. By directing x-ray beams through powdered samples, scientists are able to quickly analyze unknown materials and perform materials characterizations. This technology is particularly important in the pharmaceutical industry, where it can be used, among other purposes, to identify existing and new solid forms of an active pharmaceutical ingredient or its derivatives, to determine physical and chemical stability, to identify the solid form of the active pharmaceutical ingredient in a drug product, to identify excipients present in a drug product, to monitor for solid form conversion upon manufacturing, to detect impurities in a drug product, and to provide for a quantitative analysis of a drug product.

16. The scientific theories underlying XRPD have been known for nearly one hundred years. However, up until the end of the last century, transmission XRPD was performed horizontally, which was cumbersome, expensive, and extremely time consuming.

17. On October 3, 2001, Avantium filed a patent application in Europe, and on October 3, 2002, filed the PCT application that resulted in the '621 patent. The '621 patent relates to a method for performing a transmission diffraction analysis that is characterized by a vertical configuration, such that the radiation beam strikes the analyte in a substantially vertical and substantially perpendicular direction.

18. On January 15, 2002, Avantium filed a patent application in Europe, and on January 15, 2003, filed the PCT application that resulted in the '071 patent. The '071 patent relates to a method for successively performing a powder diffraction analysis of at least two powder samples being contained in sample holding means.

19. Beginning in March 2002, after filing the applications for the Asserted Patents, Avantium and/or Crystallics BV ("Crystallics"), a wholly owned subsidiary of Avantium, held a series of meetings with various Bruker entities, including but not limited to Bruker Nederland NV, Bruker Nonius BV and Bruker AXS GmbH, to discuss Avantium's proprietary research and breakthrough configuration, methodologies, and apparatus for performing XRPD analysis.

20. Prior to those meetings, each of the Bruker entities signed broad non-disclosure agreements ("NDAs") that were designed to protect the intellectual property of Avantium and Crystallics, and to prevent the Bruker entities from misappropriating any of the confidential information that was being presented to them. Accordingly, and believing that they were protected by the NDAs, Avantium and Crystallics provided the Bruker entities with a wide range of information regarding Avantium's research, including but not limited to their breakthrough configuration and methodologies for performing XRPD analysis.

21. On March 9, 2002, a meeting was held between Crystallics and Bruker Nonius BV. At that time, Crystallics was considering hiring Bruker Nonius BV to build new XRPD equipment based on the configuration and methodologies that are disclosed and claimed in the Asserted Patents. The specific purpose of that meeting was to discuss Crystallics' requirements with respect to the new XRPD configuration and methodologies set forth in the Asserted Patents. Crystallics intended to have Bruker Nonius BV build a number of new XRPD machines for Crystallics, so that Crystallics could offer XRPD analysis as a service, using the configuration and methods disclosed in the Asserted Patents.

22. On March 20, 2002, Crystallics entered into a five-year NDA with Bruker AXS GmbH, which was the Bruker entity in Germany that would be building the new XRPD equipment. In April 2002, Crystallics entered into yet another NDA with different people at

Bruker AXS GmbH. The April 2002 non-disclosure agreement was identical to the one signed on March 20, 2002.

23. All of the NDAs entered into between Avantium or Crystallics, on the one hand, and the various Bruker entities, on the other hand, were specifically designed to cover conversations and communications regarding the methods and configuration related to the use of vertical transmission in high throughput XRPD analysis, which is the subject matter of the Asserted Patents.

24. In spite of the various non-disclosure agreements, and despite the fact that Bruker was fully aware of the Asserted Patents, on March 20, 2002, Bruker filed a patent application in the United States and Europe for a "Transmission Mode X-Ray Diffraction Screening System," based, in part, on the information disclosed to Bruker by Avantium pursuant to the NDAs. That patent, United States Patent No. 6,859,520 (the "'520 patent"), was issued by the USPTO on February 2, 2005.

25. On May 31, 2002, Bruker sent Avantium a quote for the prototype of the new XRPD machine that Avantium wanted Bruker to build.

26. In June, 2002, Avantium suggested to Bruker the possibility that Bruker should license Avantium's intellectual property related to the configuration, methods, and apparatus disclosed in the Asserted Patents. On June 29, 2002, Bruker rejected Avantium's offer to license Avantium's intellectual property.

27. On July 2, 2002, Crystallics signed a letter of intent with Bruker for Bruker to build the new XRPD equipment. The letter of intent expressly notes that Avantium had filed three separate patent applications covering the technology that it wanted Bruker to build.

28. After signing the letter of intent, Avantium learned that Bruker had violated the NDAs by publishing pictures of the XRPD equipment it had built for Avantium and by directly

offering to sell one of the machines it had build for Avantium to one of Avantium's competitors. When Avantium confronted Bruker over these violations, Bruker denied any wrongdoing, but then eventually agreed to enter into licensing talks with Avantium. However, those talks quickly broke down when the two sides were unable to agree on a reasonable royalty.

29. On information and belief, in spite of the fact that Bruker had entered into the various NDAs to protect the information that had been given to it by Avantium/Crystallics, and in spite of the fact that Bruker had actual knowledge of the Asserted Patents, Bruker wrongfully used the information that Avantium/Crystallics had provided to Bruker in order to design and manufacture its own line of XRPD equipment. This apparatus is known as the D8 line, and it infringes the Asserted Patents.

30. On information and belief, Pfizer is using the Bruker D8 line of equipment in an infringing manner. Such belief is based, in part, on statements by Pfizer to the USPTO. For example, on January 17, 2008, Pfizer filed patent application US2008/0015343, titled "Azithromycin Dosage Forms With Reduced Side Effects," with the USPTO. In that patent application, Pfizer discloses that the "crystallinity of the azithromycin may be determined using Powder X Ray Diffraction (PXR) analysis. In an exemplary procedure, PXR analysis may be performed on a Bruker AXS D8 Advance diffractometer."

31. On November 6, 2008, Pfizer filed patent application US2008/0274192, titled "Pharmaceutical Compositions Comprising An Amorphous Form Of A VEGF-R-Inhibitor, with the USPTO. In that patent application, Pfizer discloses that the "solid amorphous dispersion formed using the above procedure was post-dried in a vacuum dessicator for 24 hours. The sample was examined using powder x-ray diffraction (PXR) with a Bruker AXS D8 Advance diffractometer using the procedure outlined above."

32. On July 10, 2012, Pfizer was granted U.S. Patent No. 8,217,057, titled "Polymorphs of a C-MET/HGFR Inhibitor." In that patent, Pfizer discloses, "Powder X-ray Diffraction (PXRD): PXRD data shown in FIG 1 was collected according to the following protocol. A sample (2 mg.) was placed on a microscopic slide with zero background. The sample was then placed in a Discover D8 (Bruker AXS Instruments) equipped with a GADDS detector."

33. On information and belief, AstraZeneca is using the Bruker D8 line of Equipment in an infringing manner. Such belief is based, in part, on statements by AstraZeneca to the USPTO. For example, on June 12, 2012, AstraZeneca was granted U.S. Patent No. 8,198,441, titled "Process For The Preparation Of Novel Pyridopyrazines A MTOR Kinase Inhibitors." In that patent, AstraZeneca discloses that "FIG. 4 demonstrates a powder X-ray diffraction pattern of (5-{2,4-bis[(3S)-3-methylmorpholin-4-yl]pyridol[2,3-d]pyrimidin-7-yl}-methoxyphenyl) methanol fumarate salt, Form A, recorded by a Bruker D8 diffractometer (wavelength of X-rays 1.5418 Å Cu source, Voltage 40 kV, filament emission 40 mA). The material was scanned from 5-40° 2θ using a step size of 0.014° and a 0.2 seconds per step time count."

34. On information and belief, Bristol-Myers is using the Bruker D8 line of Equipment in an infringing manner. Such belief is based, in part, on statements by Bristol-Myers to the USPTO. For example, on June 28, 2011, Bristol-Myers was granted U.S. Patent No. 7,968,718, titled "Process For Preparing Triazole Substituted Azaindoloxoacetic Piperazine Derivatives And Novel Salt Forms Produced Therein." In that patent, Bristol-Myers discloses that the "X-ray powder diffraction (PXRD) data were obtained with a Bruker D8 Advance diffractometer (Karlsruhe, German) which was equipped with a monochromated CuK $\alpha$  source operating at a tube load of 40 KV and 40 mA."

35. Avantium's business model was to offer XRPD analysis as a service. The increased efficiency of Avantium's patented XRPD configuration and methodologies allowed Avantium to provide XRPD analysis in a commercially advantageous manner.

36. Pfizer and AstraZeneca were Avantium clients. However, on information and belief, both Pfizer and AstraZeneca stopped using Avantium's XRPD service after purchasing infringing products from Bruker.

37. Bruker's sale of infringing products has had a devastating impact on Avantium's business, because companies now have the option of purchasing infringing products from Bruker and doing their own XRPD analysis, rather than being required to hire Avantium in order to gain access to Avantium's patented configuration and methodologies.

**COUNT I**  
**(Infringement of the '621 Patent)**  
**(Against all Defendants)**

38. Vertical Analytics incorporates and realleges the allegations of paragraphs 1-35 as are fully set forth above.

39. Upon information and belief, Bruker is infringing (literally and/or under the doctrine of equivalents), inducing infringement and/or contributing to the infringement of the '621 patent in this District and throughout the United States by, among other things, making, using, importing, offering for sale and/or selling products and services, including, without limitation, its D8 line of XRD equipment, which practice one or more of the claims of the '621 patent.

40. Upon information and belief, Pfizer is infringing (literally and/or under the doctrine of equivalents), the '621 patent in this District and throughout the United States by, among other things using products, including, without limitation, Bruker's D8 line of XRD equipment, which practice one or more of the claims of the '621 patent. For instance, as set forth

above, Pfizer has disclosed in a number of patent applications and a granted patent that it uses the Bruker D8 line of XRD equipment.

41. Upon information and belief, AstraZeneca is infringing (literally and/or under the doctrine of equivalents), the '621 patent in this District and throughout the United States by, among other things using products, including, without limitation, Bruker's D8 line of XRD equipment, which practice one or more of the claims of the '621 patent. For instance, as set forth above, AstraZeneca has disclosed in at least one patent that it uses the Bruker D8 line of XRD equipment.

42. Upon information and belief, Bristol-Myers is infringing (literally and/or under the doctrine of equivalents), the '621 patent in this District and throughout the United States by, among other things using products and services, including, without limitation, Bruker's D8 line of XRD equipment, which practice one or more of the claims of the '621 patent. For instance, as set forth above, Bristol-Myers has disclosed in at least one patent application that it uses the Bruker D8 line of XRD equipment.

43. Defendants committed these acts of infringement without license or authorization.

44. As a result of Defendants' infringement of the '621 patent, Vertical Analytics has suffered monetary damages in an amount not yet determined, and will continue to suffer damages in the future unless Defendants' infringing activities are enjoined by this Court.

45. Despite having actual notice of the '621 patent, Defendant Bruker has continued to willfully, wantonly and deliberately infringe in disregard of Vertical Analytics' rights.

46. Vertical Analytics has suffered and will continue to suffer severe and irreparable harm unless this Court issues a permanent injunction prohibiting Defendants, their agents, servants, employees, representatives, and all others acting in active concert therewith from infringing the '621 patent.

**COUNT II**  
**(Infringement of the '071 patent)**  
**(Against all Defendants)**

47. Vertical Analytics incorporates and realleges the allegations of paragraphs 1-44 as are fully set forth above.

48. Upon information and belief, Bruker is infringing (literally and/or under the doctrine of equivalents), inducing infringement and/or contributing to the infringement of the '071 patent in this District and throughout the United States by, among other things, making, using, importing, offering for sale and/or selling products and services, including, without limitation, its D8 line of XRD equipment, which practice one or more of the claims of the '071 patent.

49. Upon information and belief, Pfizer is infringing (literally and/or under the doctrine of equivalents), the '071 patent in this District and throughout the United States by, among other things using products, including, without limitation, Bruker's D8 line of XRD equipment, which practice one or more of the claims of the '071 patent. For instance, as set forth above, Pfizer has disclosed in a number of patent applications and a granted patent that it uses the Bruker D8 line of XRD equipment.

50. Upon information and belief, AstraZeneca is infringing (literally and/or under the doctrine of equivalents), the '071 patent in this District and throughout the United States by, among other things using products, including, without limitation, Bruker's D8 line of XRD equipment, which practice one or more of the claims of the '071 patent. For instance, as set forth above, AstraZeneca has disclosed in at least one patent that it uses the Bruker D8 line of XRD equipment.

51. Upon information and belief, Bristol-Myers is infringing (literally and/or under the doctrine of equivalents), inducing infringement and/or contributing to the infringement of the

'071 patent in this District and throughout the United States by, among other things using, products, including, without limitation, Bruker's D8 line of XRD equipment, which practice one or more of the claims of the '071 patent. For instance, as set forth above, Bristol-Myers has disclosed in at least one patent application that it uses the Bruker D8 line of XRD equipment.

52. Defendants committed these acts of infringement without license or authorization.

53. As a result of Defendants' infringement of the '071 patent, Vertical Analytics has suffered monetary damages in an amount not yet determined, and will continue to suffer damages in the future unless Defendants' infringing activities are enjoined by this Court.

54. Despite having actual notice of the '071 patent, Defendant Bruker has continued to willfully, wantonly and deliberately infringe in disregard of Vertical Analytics' rights.

55. Vertical Analytics has suffered and will continue to suffer severe and irreparable harm unless this Court issues a permanent injunction prohibiting Defendants, their agents, servants, employees, representatives, and all others acting in active concert therewith from infringing the '071 patent.

#### **DEMAND FOR JURY TRIAL**

Plaintiff Vertical Analytics, under Rule 38 of the Federal Rules of Civil Procedure, requests a trial by jury of any issues so triable by right.

#### **PRAYER FOR RELIEF**

For the above reasons, Vertical Analytics respectfully requests that this Court grant the following relief in favor of Vertical Analytics and against Defendants:

(a) A judgment in favor of Vertical Analytics that Defendants have infringed, directly (either literally or under the doctrine of equivalents), and/or indirectly, by way of inducing and/or contributing to the infringement of one or more claims of each of the Asserted Patents;

(b) A permanent injunction enjoining Defendants and their officers, directors, agents, servants, affiliates, employees, divisions, branches, subsidiaries, parents, and all others acting in active concert or participation with them, from infringing, inducing the infringement of, or contributing to the infringement of each of the Asserted Patents;

(c) A judgment and order requiring Defendants to pay Vertical Analytics its damages, costs, expenses, and pre-judgment and post-judgment interest for Defendants' infringement of each of the Asserted Patents;

(d) A judgment and order requiring Defendants to provide an accounting and to pay supplemental damages to Vertical Analytics, including, without limitation, pre-judgment interest;

(e) A judgment declaring that Defendant Bruker's infringement of the Asserted Patents was willful;

(f) A judgment against Defendant Bruker declaring that Vertical Analytics is entitled to enhanced damages as a result of the knowing, deliberate, and willful nature of Defendant Bruker's infringement;

(g) A judgment against Defendant Bruker declaring that this is an exceptional case within the meaning of 35 U.S.C. § 285 as against Defendant Bruker and awarding Vertical Analytics its reasonable attorneys' fees against Defendant Bruker; and

(h) Any and all such other relief as the Court deems just and proper.

October 26, 2012

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