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8 UNITED STATES DISTRICT COURT  
9 DISTRICT OF ARIZONA

10 Mohith Verghese, an individual, and Carl  
11 White, an individual,

12 Plaintiffs,

13 v.

14 ASM America, Inc., a Delaware  
15 corporation,

16 Defendant.

No. \_\_\_\_\_

**COMPLAINT FOR  
DECLARATORY JUDGMENT**

17 Plaintiffs Mohith Verghese and Carl White, for their complaint against Defendant  
18 ASM America, Inc., allege as follows:

19 **THE PARTIES**

20 1. Plaintiff Mohith Verghese (“Verghese”) is an individual who is a resident  
21 of Maricopa County, Arizona.

22 2. Plaintiff Carl White (“White”) is an individual who is a resident of  
23 Maricopa County, Arizona.

24 3. On information and belief, Defendant ASM America, Inc. (“ASM”) is a  
25 Delaware corporation headquartered in Phoenix, Arizona. ASM is a wholly owned  
26 subsidiary of ASM International N.V.

1 **JURISDICTION AND VENUE**

2 4. The claims herein arise under or depend on substantial issues of federal  
3 patent law pursuant to the Patent Act, 35 U.S.C. § 1 *et seq.* Under 28 U.S.C. §§ 1331 and  
4 1338(a), such claims are within the subject matter jurisdiction of the United States  
5 District Courts. The claims and matters herein present a case of actual controversy for  
6 which this Court may declare the rights and other legal relations of the parties under the  
7 Federal Declaratory Judgment Act, 28 U.S.C. § 2201 *et seq.* To the extent any claim  
8 herein is not within exclusive federal jurisdiction, the United States District Courts have  
9 supplemental jurisdiction over such claims under 28 U.S.C. § 1367.

10 5. Personal jurisdiction and venue in this Court are proper because White and  
11 Verghese are residents of Arizona; ASM is headquartered in Phoenix, Arizona; and the  
12 claims arise out of acts that ASM committed in Arizona. 28 U.S.C. § 1391 (b), (c).

13 **BACKGROUND AND NATURE OF THE DISPUTE**

14 6. Applied Materials, Inc. (“Applied Materials”) and ASM supply various  
15 types of tools used to manufacture semiconductor chips. One such category of tool that  
16 both ASM and Applied Materials develop and manufacture is Atomic layer deposition  
17 tools (“ALD tools”). Although the basic purpose of ASM’s and Applied Materials’  
18 respective ALD tools is similar, the tools are not the same in operation or design.

19 7. Verghese and White are former employees of ASM. Verghese worked at  
20 ASM from about February 2002 to about December 2018. White worked at ASM from  
21 about 2004 to about 2011 and again from February 2012 through August 2019.

22 8. Applied Materials hired Verghese in late January 2019.

23 9. White provided consulting services to Applied Materials as an independent  
24 contractor from about January 2020 to about February 2022.

25 10. In about February 2020, Verghese, White, and Applied Materials employee  
26 David Marquardt (“Marquardt”) began working to create a novel apparatus for use in

1 tools such as Applied Materials' ALD tools to improve the throughput of their operation  
2 in semiconductor chip fabrication facilities.

3 11. Semiconductor wafer processing equipment such as Applied Materials'  
4 ALD tools may include solid chemical delivery systems to provide one or more process  
5 gases to a process chamber for performing a suitable chemical process such as thin film  
6 deposition or etching. Solid chemical delivery systems typically include a sublimation  
7 vessel that contains a solid precursor. Conventionally, once the solid precursor is depleted  
8 from the sublimation vessel, the sublimation vessel typically needs to be cooled, removed  
9 from the processing tool, and returned to a chemical supplier to be refilled, resulting in  
10 tool downtime. Alternatively, some solid chemical delivery systems may rely on  
11 extremely large sublimation vessels located off of the processing tool. However, these  
12 extremely large sublimation vessels are expensive and require a long length of heated  
13 delivery lines which are expensive, complex, and hard to control. There was thus a need  
14 for a method of replenishing the chemicals within a sublimation chamber of typical size  
15 that did not require an extensive process of removing the sublimation vessel from the  
16 processing tool in order to be refilled.

17 12. While at Applied Materials, Verghese, White, and Marquardt identified this  
18 need and sought to improve these conventional solid chemical delivery systems by  
19 conceiving of a refillable solid precursor sublimation vessel with a lid, a refill port, and a  
20 solid precursor refill cartridge that can be removed. This novel system avoids the delay  
21 required to replace solid precursor sublimation vessels in conventional systems by  
22 allowing a solid precursor sublimation vessel to be refilled in place, without being cooled  
23 or removed from the tool.

24 13. Verghese, White, and Marquardt's novel refillable solid chemical delivery  
25 system tool design and configuration naturally builds upon concepts that were widely  
26 known in the field. For example, the system includes a flow restricting structure with one

1 or more baffles defining a tortuous flow path, or a filter plate comprising filter media,  
2 suspended below the lid of the sublimation vessel so as to increase the residence time of  
3 the carrier gas within the sublimation vessel and thereby provide a higher saturation of  
4 sublimed precursor material in the carrier gas stream flowing to the process chamber. As  
5 another example, the system may also include a structure disposed within the sublimation  
6 vessel to distribute uniformly and heat the solid precursor during refilling of the  
7 sublimation vessel.

8 14. Vergheese, White, and Marquardt presented their novel refillable solid  
9 chemical delivery system (“the Invention”) to Applied Materials in an invention  
10 disclosure form on July 31, 2020.

11 15. With Vergheese, White, and Marquardt’s participation and assistance,  
12 Applied Materials sought protection for the Invention by filing U.S. Patent Application  
13 No. 17/093,518 on November 9, 2020 (the “Applied ’518 Application”) with the United  
14 States Patent and Trademark Office (the “Patent Office”). The Applied ’518 Application  
15 names Vergheese, White, and Marquardt as the inventors. The Patent Office published the  
16 Applied ’518 Application on May 12, 2022, as U.S. Patent Application Publication No.  
17 2022/0145456 A1 (the “’456 Publication”), a true and correct copy of which is attached  
18 to this Complaint as Exhibit A.

19 16. Vergheese, White, and Marquardt invented the refillable vessel at Applied  
20 Materials. They did not invent the refillable vessel at ASM. ASM has no claim to  
21 Vergheese and/or White’s inventions post-employment.

22 17. ASM falsely alleges that Vergheese and White derived the Invention from  
23 their work at ASM or the confidential information of ASM, and, amongst other things,  
24 seeks to deprive Vergheese and White of the ability to seek patent protection for the  
25 Invention that they developed at Applied Materials with the help of Marquardt. ASM  
26 made these allegations in a lawsuit it filed against Vergheese and White in Arizona

1 Superior Court seeking money damages and an injunction to stop them from participating  
2 in the prosecution of the Applied '518 Application for the Invention that they conceived  
3 and reduced to practice with Marquardt (the "State Court Complaint"). The State Court  
4 Complaint further seeks to prohibit Verghese and White from prosecuting *any* patent  
5 application that uses information related to their employment at ASM.

6 18. In the State Court Complaint, ASM alleges that Verghese and White "each  
7 signed an Employee Intellectual Property Assignment & Confidentiality Agreement (the  
8 'Agreements')" requiring them to disclose, assign, and transfer "all ... right, title, and  
9 interest in all... discoveries, innovations, ... processes, manufacturing techniques, trade  
10 secrets, [and] inventions ... which are conceived, made, developed, created or acquired  
11 by [him], including all rights to obtain, register, perfect and enforce these interests that  
12 relate to [his] work during the period of [his] employment with [ASM]...." ASM further  
13 alleges that Verghese and White each agreed not to disclose "any confidential  
14 information of [ASM,]" where confidential information includes "all information  
15 developed by, obtained by, or disclosed to [him] by [ASM] that related to [ASM]  
16 business, including without limitation, products, processes, designs, test data, customer  
17 and supplier lists, trade secrets and the results of [his] work, except such information as is  
18 publicly disclosed by [ASM] or is or becomes publicly known through no wrongful act  
19 by [him]."

20 19. In the State Court Complaint, ASM falsely alleges that Verghese and White  
21 "breached the Agreement [sic] by filing patent applications for their current employer for  
22 innovations conceived at ASM or derived from their work at ASM."

23 20. In the State Court Complaint, ASM alleges that Verghese, White, and  
24 others at ASM developed three specific "innovations" that Verghese and White later  
25 incorporated into the Applied '518 Application: (1) fluid paths machined in a sublimation  
26 vessel wall; (2) a serpentine fluid path machined into the lid of the sublimation vessel;

1 and (3) a thermally conductive heat transfer conduit disposed along the housing axis that  
2 may have a number of thermally conductive protrusions disposed radially around the  
3 conductive heat transfer conduit.

4 21. In the State Court Complaint, ASM alleges that Verghese, White, and  
5 others at ASM included these purported innovations in ASM's own U.S. Patent  
6 Application 16/539,911, which ASM filed on August 13, 2019 ("the ASM '911  
7 Application"). As ASM concedes, the three alleged innovations became public no later  
8 than February 20, 2020—nearly nine months before the Applied '518 Application was  
9 filed—when the Patent Office published the ASM '911 Application as U.S. Patent  
10 Application Publication No. 2020/0056283 A1 (the "'283 Publication").

11 22. In the State Court Complaint, ASM alleges that aspects of the disclosure of  
12 the Applied '518 Application mimic the three above "innovations" in the ASM '911  
13 Application. However, the Applied '518 Application includes no description of the first  
14 two alleged ASM "innovations"—i.e., fluid paths machined in a sublimation vessel wall  
15 or a serpentine fluid path machined into the lid of the sublimation vessel. As for the third  
16 alleged "innovation," in the Applied '518 Application, the design of the sublimation  
17 vessel improves distribution of the solid source precursor upon refilling the sublimation  
18 vessel. As described above, the Applied '518 Application is directed to an improved  
19 refillable sublimation vessel, and the ASM '911 Application is not.

20 23. In the State Court Complaint, ASM further alleges against White that he  
21 "breached the Agreement by filing patent applications for an innovation he conceived at  
22 ASM but failed to disclose to ASM." The purported "innovation" is the use of multiple  
23 thermocouples inside the sublimation vessel. However, the use of multiple thermocouples  
24 to measure temperature inside a sublimation vessel was publicly known long before  
25 either of the Applied '518 or ASM '911 Applications. For example, U.S. Patent No.  
26 9,598,766 (attached hereto as Exhibit B), which issued on March 21, 2017, discloses a

1 “vessel for the vaporization and/or sublimation of a precursor material.” (Ex. B at col.  
2 4:16-17.) The patent further discloses that the vessel may have one or more  
3 thermocouples located inside the vessel. (*Id.* at 9:9-19.) Additionally, U.S. Patent No.  
4 6,550,963 (attached hereto as Exhibit C), which issued on April 22, 2003, discloses the  
5 use of a multipoint thermocouple used inside a vessel used in chemical processes.

6 24. In the State Court Complaint, ASM further alleges that Plaintiffs “breached  
7 the Agreements, as described herein, by failing to assign to ASM all right and title in the  
8 patent applications” and that Plaintiffs “further breached the Agreements by ... using  
9 ASM confidential information to prosecute patents for the benefit of themselves and  
10 [Applied Materials].”

11 25. In the State Court Complaint, ASM requests “an order enjoining [Verghese  
12 and White] from prosecuting any patents using information gained during or related to  
13 [their] employment with ASM.”

14 26. A live dispute requiring judicial resolution has arisen between Verghese  
15 and White on one side and ASM on the other. The parties dispute whether Verghese,  
16 White, and Marquardt conceived and reduced to practice the Invention described and  
17 claimed in the Applied ’518 Application (a) after Verghese and White had left ASM,  
18 (b) in the course of their work for Applied Materials, and (c) without derivation from  
19 confidential ASM information or work that Verghese and White did at ASM. The parties  
20 further dispute whether Verghese, White and others listed in the ASM ’911 Application  
21 conceived the Invention described and claimed in the Applied ’518 Application.

22 **COUNT I**  
23 **DECLARATORY JUDGMENT REGARDING INVENTORSHIP**  
24 **BY VERGHESE AND WHITE**

25 27. Verghese and White incorporate the allegations of paragraphs 1-26 above  
26 as if fully set forth herein.





1 from work by Verghese, White, or others at ASM and without relying on confidential  
2 ASM information. For example, ASM alleges that the Applied '518 Application adopts  
3 “innovations” presented in the ASM '911 Application.

4 33. In the State Court Complaint, ASM seeks to prevent Verghese and White  
5 from participating in the prosecution of the Applied '518 Application and potentially  
6 other patent applications.

7 34. The Applied '518 Application and the ASM '911 Application are each  
8 under review by the Patent Office. No patent has issued as to either application.

9 35. Under 35 U.S.C. §§ 111 and 116 of the Patent Act, an inventor has a  
10 statutory right to apply for patent protection of inventions, and disputes of inventorship as  
11 to pending patent applications are within the exclusive purview of the Patent Office and  
12 may not be decided in a court action. A live and justiciable dispute has arisen between the  
13 parties as to inventorship and whether Verghese and White may pursue patent protection  
14 under the Applied '518 Application under examination at the Patent Office.

15 36. To resolve the dispute, Verghese and White request a declaratory judgment  
16 and injunction barring ASM from using a court action while the Applied '518  
17 Application is under examination to: (i) contest that Verghese and White, together with  
18 Marquardt, invented the novel refillable sublimation vessel improvement presented in the  
19 Applied '518 Application during the course of their work for Applied Materials without  
20 derivation from work by Verghese, White, or others at ASM and without relying on  
21 confidential ASM information; or (ii) interfere with Verghese and White's participation  
22 in the examination of the Applied '518 Application.

23 **JURY DEMAND**

24 Plaintiffs demand a trial by jury as to all issues so triable in this action.  
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**PRAYER FOR RELIEF**

WHEREFORE, Plaintiffs Verghese and White pray for the following relief:

- A. Declaratory Judgment against ASM pursuant to Count I or in the alternative Count II;
- B. An injunction against ASM pursuant to Count II;
- C. Attorneys’ fees and costs incurred in obtaining the above-referenced injunctive relief; and
- D. Such other relief as the Court may deem just and proper.

Dated: October 13, 2022

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