

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

STMICROELECTRONICS, INC.
Petitioner,

v.

OCEAN SEMICONDUCTOR LLC,
Patent Owner.

IPR2022-00680
Patent 6,907,305 B2

Before MIRIAM L. QUINN, JOHN D. HAMANN, and DAVID COTTA,
Administrative Patent Judges.

QUINN, *Administrative Patent Judge.*

DECISION
Granting Institution of *Inter Partes* Review
35 U.S.C. § 314
Granting Motion for Joinder
35 U.S.C § 315(c); 37 C.F.R. § 42.122

I. INTRODUCTION

Petitioner STMicroelectronics, Inc. (“Petitioner”) filed a Petition requesting *inter partes* review of claims 1–25 and 33–53 of U.S. Patent No. 6,907,305 B2 (“the ’305 patent”). Paper 1 (“Pet.”). Petitioner also filed a Motion for Joinder seeking joinder as a petitioner with Applied Materials, Inc. in *Applied Materials, Inc v. Ocean Semiconductor LLC*, IPR2021-01344 (the “Applied Materials IPR”). Paper 3 (“Joinder Motion”). Ocean Semiconductor (“Patent Owner”) filed a Preliminary Response. Paper 7 (“Prelim. Resp.”). With authorization of the Board, Petitioner filed a Reply to Patent Owner’s Preliminary Response. Paper 8 (“Reply”). And Patent Owner filed a Sur-Reply to Petitioner’s Reply. Paper 9 (“Sur-Reply”). Patent Owner did not file an opposition to the Motion for Joinder.

We have authority under 35 U.S.C. § 314. Upon considering the information presented in the parties’ papers, for reasons discussed below, we institute *inter partes* review of claims 1–25 and 33–53 of the ’305 patent and grant Petitioner’s Motion for Joinder.

A. Related Matters

The parties indicate that the ’305 patent has been asserted in ten pending litigations: *Ocean Semiconductor LLC v. Analog Devices, Inc.*, No. 1:20-cv-12310 (D. Mass.); *Ocean Semiconductor LLC v. Infineon Techs. AG*, No. 1:20-cv-12311 (D. Mass.); *Ocean Semiconductor LLC v. Huawei Devices USA, Inc.*, No. 4:20-cv-991 (E.D. Tex.); *Ocean Semiconductor LLC v. MediaTek Inc.*, No. 6:20-cv-1210 (W.D. Tex.); *Ocean Semiconductor LLC v. NVIDIA Corp.*, No. 6:20-cv-1211 (W.D. Tex.); *Ocean Semiconductor LLC v. NXP Semiconductors N.V.*, No. 6:20-cv-1212 (W.D. Tex.); *Ocean Semiconductor LLC v. Renesas Electronics Corp.*, No. 6:20-cv-1213 (W.D. Tex.); *Ocean Semiconductor LLC v. Silicon*

Labs. Inc., No. 6:20-cv-1214 (W.D. Tex.); *Ocean Semiconductor LLC v. STMicroelectronics, Inc.*, No. 6:20-cv-1215 (W.D. Tex.); and *Ocean Semiconductor LLC v. Western Digital Techs., Inc.*, No. 6:20-cv-1216 (W.D. Tex.). Pet. 1–2; Paper 5 (Patent Owner’s Mandatory Notices), 2. In addition, Petitioner has filed another petition for *inter partes* review (IPR2022-00681) of related patent U.S. Patent No. 6,968,248 B1. Pet 2.

B. The ’305 Patent

The ’305 patent relates to “scheduling in an automated manufacturing environment.” Ex. 1001, 1:17–18. The ’305 patent describes the manufacture of integrated circuits for modern semiconductor devices containing numerous structures or features, typically the size of a few micrometers. *Id.* at 1:35–38. The ’305 patent further describes that the fabrication of integrated circuits generally involves processing a number of wafers through a series of fabrication tools, where layers of material are added to, removed from, and/or treated on a semiconducting substrate. *Id.* at 1:38–42. According to the ’305 patent, controlling a semiconductor factory (“fab”) that fabricates such integrated circuits is a challenging task, where the fab is a complex environment where numerous parts (typically 40,000 wafers or more) and numerous part types (typically 100 part types or more) are simultaneously being manufactured. *Id.* at 1:63–2:1. As each wafer moves through the fab, it may undergo more than 300 processing steps, many of which use the same machines, where a large factory may contain approximately 500 computer-controlled machines to perform this wafer processing. *Id.* at 2:1–6. As described in the ’305 patent, routing, scheduling, and tracking material through the fab is a difficult and complicated task, even with the assistance of a computerized factory control system. *Id.* at 2:6–9.

Figure 3 illustrates an implementation of reactive scheduling of activities of a process flow for a semiconductor fabrication facility and is reproduced below.

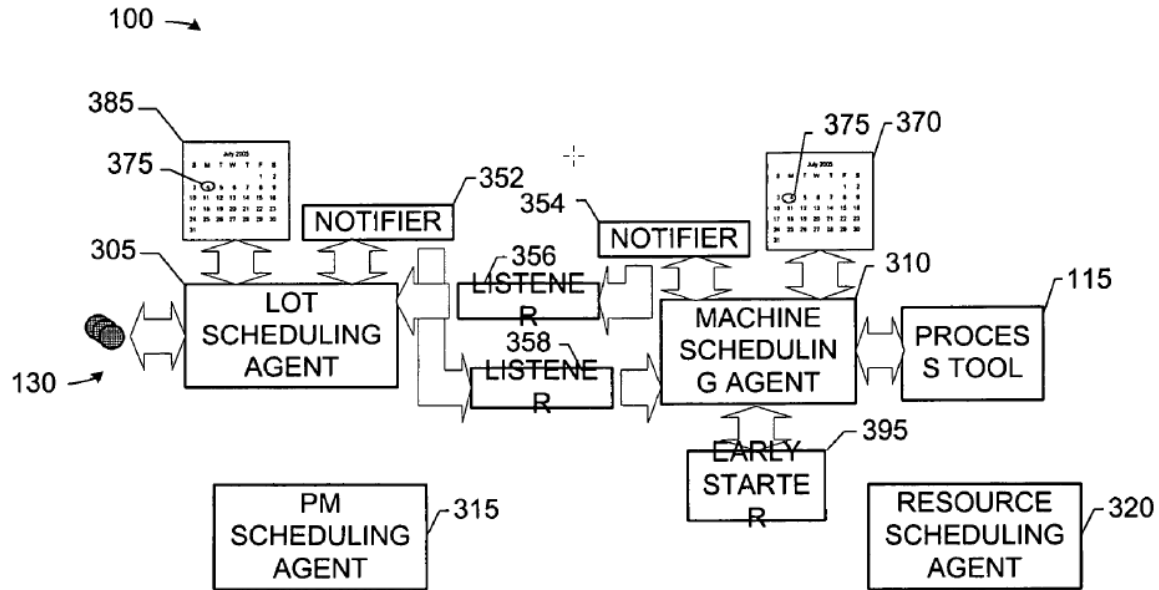


FIG. 3

Figure 3 shows a portion of a process flow from a semiconductor fabrication facility, and the manner in which it schedules appointments for the consumption of resources. *Id.* at 4:26–30. Process flow 100 fabricates semiconductor devices. *Id.* at 5:3–4. Process flow 100 includes stations 105, each station 105 including computing device 110 communicating with process tool 115. *Id.* at 5:15–17. Process tools 115 are processing lots 130 of wafers 135 that will eventually become integrated circuit devices, where process tool 115 may be a fabrication tool used to fabricate some portion of the wafers 135. *Id.* at 5:22–24, 6:41–43.

Each computing device 110 includes software agent 265, where software agents 265, collectively, are responsible for efficiently scheduling and controlling lots 130 of wafers 135 through the fabrication process. *Id.* at

6:22–24, 45–48. Collectively, software agents 265 reactively and proactively schedule activities for each lot 130 one or more operations on a specific qualified process tool 115. *Id.* at 6:61–7:1. More specifically, the software agents (or scheduling agents) 265 include: Lot Scheduling Agent (“LSA”) 305 that schedules activities on behalf of lots 130 of wafers 135; Machine Scheduling Agent (“MSA”) 310 that schedules activities on behalf of process tools 115; PM Scheduling Agent (“PMSA”) 315 that schedules activities on behalf of preventative maintenance (“PMs”) and equipment qualification (“Quals”) (not shown in Figure 3); and a Resource Scheduling Agent (“RSA”) that schedules activities on behalf of resources (not shown in Figure 3). *Id.* at 7:18–28. Some of these activities are scheduled reactively (i.e., in response to events occurring in the process flow 100). *Id.* at 7:34–35. For example, the ’305 patent describes the process as detecting an occurrence of a predetermined event in process flow 100; notifying a subscribing software scheduling agent (e.g., LSA 305, MSA 310, PMAS 315, or RSA 320) of the occurrence; and reactively scheduling an action responsive to the detection of the predetermined event. *Id.* at 7:38–8:5.

C. Illustrative Claims

Of the challenged claims, claims 1, 12, 19, 33, and 44 are independent. Each of challenged claims 2–11, 13–18, 20–25, 34–43, and 45–53 depends from claim 1, 12, 19, 33, or 44.

Claim 1 is illustrative:

1. A method for scheduling in an automated manufacturing environment, comprising:

detecting an occurrence of a predetermined event in a process flow;

notifying a software scheduling agent of the occurrence;
and

reactively scheduling an action from the software scheduling agent responsive to the detection of the predetermined event.

Ex. 1001, 39:52–60.

II. INSTITUTION OF *INTER PARTES* REVIEW

On February 9, 2022, we instituted *inter partes* review in IPR2021-01344 based on the following prior art and grounds of unpatentability (Applied Materials IPR, Paper 17):

a) *Schulze*: U.S. Patent Application Publication No. U.S. 2002/0116083 (provisional application filed Oct. 17, 2000; application filed Oct. 16, 2001; published Aug. 22, 2002), filed as Exhibit 1005; and

b) *Gupta*: U.S. Patent No. 4,888,692 (filed Nov. 10, 1988; issued Dec. 19, 1989), filed as Exhibit 1006.

Challenged Claim(s)	Basis	References
1–25, 33–53	§ 103(a)	Schulze, Gupta

In this proceeding, Petitioner asserts the same grounds as those we instituted in the Applied Materials IPR. Pet. 13; *see also* Joinder Motion 1. Petitioner relies also on a Declaration of Dr. Stanley Shanfield, Ph.D., filed as Exhibit 1002 (“Shanfield Declaration”). Petitioner asserts that the Shanfield Declaration is identical to the Shanfield Declaration filed in the Applied Materials IPR. Joinder Motion 3.

We have reviewed the Preliminary Response. It does not substantively address the merits of the Petition. In view of the identicalness of the issues in the instant Petition and the Applied Materials IPR and the previously-considered arguments from Patent Owner proffered in the Applied Materials IPR, we conclude that the Petitioner presents a reasonable likelihood that the Petitioner would prevail with respect to at least one challenged claim for the same reasons as indicated in our Decision Granting Institution of *Inter Partes* Review in IPR2021-01344.

III. GRANT OF MOTION FOR JOINDER

Joinder in *inter partes* review is subject to the provisions of 35 U.S.C. § 315(c):

(c) JOINDER.—If the Director institutes an inter partes review, the Director, in his or her discretion, may join as a party to that inter partes review any person who properly files a petition under section 311 that the Director, after receiving a preliminary response under section 313 or the expiration of the time for filing such a response, determines warrants the institution of an inter parties review under section 314.

As the moving party, Petitioner bears the burden of proving that it is entitled to the requested relief. 37 C.F.R. § 42.20(c). A motion for joinder should: (1) set forth the reasons joinder is appropriate; (2) identify any new grounds of unpatentability asserted in the petition; and (3) explain what impact (if any) joinder would have on the trial schedule for the existing review. *See* Frequently Asked Question H5, <https://www.uspto.gov/patents/ptab/ptab-e2e-frequently-asked-questions>. And the one-year statutory bar under 35 U.S.C. § 315(b) does not apply to a request for joinder. 35 U.S.C. § 315(c).

Petitioner asserts that it filed the Motion for Joinder no later than one month after the institution date of IPR2021-01344, in accordance with 37 C.F.R. § 42.122(b). Joinder Motion 3. Patent Owner does not oppose joinder, but states that such non-opposition is subject to two conditions. Prelim. Resp. 1. First, that “the Petition does not contain any arguments not already set forth in the [Applied Materials] IPR[.]” *Id.* Second, “if Applied Materials, Inc. . . . withdraws its contentions in the co-pending . . . IPR, STMicro[electronics] must also withdraw each of its Grounds from this matter.” *Id.*

As an initial matter, our decision on whether to institute review is binary – either we institute review or we do not. *SAS Institute Inc. v. Iancu*, 138 S. Ct. 1348, 1355 (2018) (“Here the statute says the Director must decide ‘whether to institute an inter partes review . . . pursuant to a petition.’ § 314(b). The Director, we see, is given only the choice ‘whether’ to institute an inter partes review. That language indicates a binary choice — either institute review or don’t.”). We do not make conditional institution decisions, as Patent Owner here requests. Prelim. Resp. 1 (“Ocean does not

oppose the Motion for Joinder, provided . . .”). In addition, we are disinclined to rule in advance on an issue that is not, and may never be, before us, like Patent Owner’s attempt to condition institution on Petitioner withdrawing if the petitioner in the Applied Materials IPR withdraws. *Id.* Simply put, there is no statutory or precedential authority for what Patent Owner requests here—to only grant joinder if Petitioner STMicroelectronics remains an understudy in the Applied Materials IPR, and for STMicroelectronics to withdraw if Applied Materials withdraws. Accordingly, we grant joinder and find unpersuasive Patent Owner’s contention that a grant of Petitioner’s joinder request would be appropriate only under the conditions placed by Patent Owner. Nevertheless, to guide the parties, and provide further support for our decision to institute review, we provide the following additional views on each of Patent Owner’s conditions.

Regarding the first condition, Patent Owner does not dispute that Petitioner does not include any new arguments in its Petition. Prelim. Resp. 3. Therefore, we find that, for the challenged claims, the Petition here is substantively identical to the Petition in the Applied Materials IPR. Joinder Motion 3. We also find that the Joinder Motion is timely. The evidence is also identical, including reliance on the same Shanfield Declaration. *Id.* As the issues presented in the Petition do not add anything new to the ongoing IPR, we, therefore, determine that Patent Owner’s first condition is either irrelevant or moot in light of the current circumstances.

Regarding the second condition, Patent Owner argues that the Board must not allow STMicroelectronics to proceed as a petitioner in IPR2021-01344 if Applied Materials withdraws or dismisses its contentions. Prelim. Resp. 6. Patent Owner argues that without joinder STMicroelectronics is

time-barred, and thus cannot be allowed to proceed as a Petitioner in IPR2021-01344 without Applied Materials because to do so would “continue a proceeding that would otherwise be terminated.” *Id.* at 5–6 (citing *Apple Inc. v. UNILOC 2017 LLC*, IPR2020-00854, Paper 9 at 4 (PTAB Oct. 28, 2020) (“*Apple*”). According to Patent Owner, allowing Petitioner to proceed in such a case would “flout multiple Federal statutes, [PTAB] precedential opinions, and Supreme Court precedent by proceeding in a matter where it would otherwise have been explicitly barred.” *Id.* at 6.

Specifically, Patent Owner argues that allowing Petitioner to continue a proceeding in the event of an Applied Materials withdrawal would be a potential abuse of the post-grant review process in the form of a repeated attack on a single patent, functionally granting Petitioner “a second bite at asserting invalidity . . . [and] would also impose undue prejudice on Patent Owner.” Sur-Reply 1; *see* Prelim. Resp. 4, 6. Patent Owner cites *Apple* to support the contention that a party cannot use joinder to “continue a proceeding that would otherwise be terminated.” Prelim. Resp. 6 (quoting *Apple*).

We are unpersuaded by Patent Owner’s arguments. 35 U.S.C. § 315 provides that joinder is discretionary and explicitly allows for joinder of a time-barred Petitioner. 35 U.S.C. § 315(b)-(c) (“The time limitation set forth . . . shall not apply to a request for joinder.”) Therefore, the fact that STMicroelectronics may be time-barred is irrelevant to its joinder as a Petitioner in IPR2021-01344, even should Applied Materials later withdraw. *Id.*

Furthermore, we find unpersuasive Patent Owner’s argument that, based on *Apple*, Petitioner cannot continue the proceeding if Applied Materials withdraws because it would “continue a proceeding that would

otherwise be terminated.” Prelim Resp. 6. *Apple* addressed whether a petitioner who had *a first petition denied on the merits* would be allowed to join an already-instituted IPR through a second petition. *See Apple*, 4. Such a situation is “the kind of serial attack that *General Plastic* was intended to address” and the remedy is to discretionarily deny institution. *Id.* The situation in *Apple* is not analogous to the instant case. Unlike the petitioner in *Apple*, Petitioner STMicroelectronics has not previously filed a petition that was denied on the merits, and properly filed its Petition and Joinder Motion within one month of the institution date of the Applied Materials IPR. Therefore, neither the rationale nor the outcome of *Apple* applies here.

As to Petitioner’s showing for the remaining requirement for joinder, Petitioner has shown that the trial schedule will not be affected by joinder. Joinder Motion 5–6. No changes in the schedule are anticipated or necessary, and the limited participation, if at all, of Petitioner will not impact the timeline of the ongoing trial. *Id.*

Petitioner shall adhere to the existing schedule of IPR2021-01344 and the “understudy” role it has agreed to assume. *Id.* at 1. More specifically, so long as any Applied Materials IPR Petitioner entity is a party to the Applied Materials IPR, all filings of Petitioner in the Applied Materials IPR shall be consolidated with the filings of the Applied Materials IPR Petitioner. The page limits set forth in 37 C.F.R. § 42.24 will apply to all consolidated filings.

Petitioner is bound by any discovery agreements between Patent Owner and the Applied Materials IPR Petitioner in the Applied Materials IPR, and shall not seek any additional discovery. Patent Owner shall not be required to provide any additional discovery or deposition time as a result of joinder. In addition, if an oral hearing is requested and scheduled,

Petitioners in IPR2021-01344 shall collectively designate attorneys to present at the oral hearing in a consolidated argument.

The Board expects Petitioner to attempt to resolve any disputes among the entities involved and to contact the Board only if such matters cannot be resolved. This arrangement promotes the just and efficient administration of the ongoing trial and the interests of Petitioner and Patent Owner.

IV. ORDER

In consideration of the foregoing, it is hereby:

ORDERED that IPR2022-00680 is hereby instituted on the following grounds:

Challenged Claim(s)	Basis	References
1–25, 33–53	§ 103(a)	Schulze and Gupta

FURTHER ORDERED that Petitioner’s Motion for Joinder with IPR2021-01344 is *granted*, and STMicroelectronics, Inc. is hereby joined as a petitioner in IPR2021-01344;

FURTHER ORDERED that the Scheduling Order entered in IPR2021-01344 and schedule changes agreed to by the current parties in IPR2021-01344 (pursuant to the Scheduling Order) shall govern the schedule;

FURTHER ORDERED that all filings by the Petitioner entities in IPR2021-01344 will be consolidated and no filing by Petitioner alone will be allowed without prior authorization by the Board;

FURTHER ORDERED that Petitioner is bound by any discovery agreements between Patent Owner and the Petitioner in IPR2021-01344, and that Petitioner shall not seek any additional discovery;

FURTHER ORDERED that the Petitioner entities in IPR2021-01344 shall collectively designate attorneys to present at the oral hearing in a consolidated argument;

FURTHER ORDERED that a copy of this Decision be entered into the record of IPR2021-01344; and

FURTHER ORDERED that the case caption in IPR2021-01344, from now on, shall reflect joinder with this proceeding in accordance with the attached example.

IPR2022-00680
Patent 6,907,305 B2

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OCEAN SEMICONDUCTOR LLC,
Patent Owner.

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Patent 6,907,305 B2

¹ STMicroelectronics filed a motion for joinder and a petition in IPR2022-00680, which were granted, and, therefore, STMicroelectronics has been joined to this proceeding.