

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte AJIT PARANJPE and KANGZHAN ZHANG

Appeal 2007-2384
Application 10/943,424
Technology Center 2800

Decided: April 10, 2008

Before JOSEPH L. DIXON, ROBERT E. NAPPI, and JOHN A. JEFFERY,
Administrative Patent Judges.

DIXON, *Administrative Patent Judge.*

DECISION ON REQUEST FOR REHEARING

This is a decision on appeal under 35 U.S.C. § 134 from the Examiner's final rejection of claims 1-3, 5-9, and 21-29. We have jurisdiction under 35 U.S.C. § 6(b).

We grant Appellants' Request for Rehearing to the extent that we have considered Appellants' arguments but deny modifying our Decision.

BACKGROUND

Appellants' invention relates to a poly-silicon-germanium gate stack and method for forming the same. An understanding of the invention can be derived from a reading of exemplary claim 1, which is reproduced below.

1. A gate stack for semiconductor MOS device comprising:
 - a dielectric film formed on a semiconductor substrate of said semiconductor MOS device;
 - a first α -Si layer formed on the dielectric film having a thickness from about 30 Å to about 50 Å;
 - a poly-SiGe layer formed on the first α -Si layer;
 - a second α -Si layer formed on the poly-SiGe layer; and
 - a poly-Si layer formed on the second α -Si layer.

PRIOR ART

The prior art references of record relied upon by the Examiner in rejecting the appealed claims are:

KIM	US 2003/0025165 A1	Feb. 6, 2003
RYU	US 6,855,641 B2	Feb. 15, 2005
BAE	US 6,878,580 B2	Apr. 12, 2005

REJECTIONS

Claims 1, 3, 5-8, 21, and 23-28 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Ryu in view of Bae.

Claims 2, 9, 22, and 29 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Ryu in view of Bae as applied to claims 1, 3, 5-8, 21, and 23-28 above, and further in view of Kim.

ANALYSIS

In the Request for Reconsideration (which we treat as a Request for Rehearing pursuant to 37 C.F.R. § 41.52), Appellants argue that the Board has misinterpreted Appellants' argument regarding a lack of motivation to replace the polysilicon layer of Ryu with an amorphous silicon layer and as maintained by the Examiner (Request 2). Appellants clarify that this argument is directed to the combination of teachings rather than specific language in the claims concerning diffusion or prevention thereof.

As discussed at page 7 of the Decision, we reiterated the Examiner's position with respect to the combination and the Examiner's position with respect to amorphous silicon. On page 8 of the Decision, we found that the Examiner had made a persuasive showing with respect to the combination of teachings, and we did not find that Appellants had shown error in that initial showing. At the bottom of page 7 of the Decision, we stated that we did not agree with Appellants' argument that Ryu teaches away from using a seed layer that prevents diffusion, and that this teaching would not have suggested the combination. As stated earlier in the Decision, we restated that the Examiner maintained that disclosed examples and preferred embodiments in Ryu do not constitute a teaching away from a broader

disclosure or non-preferred embodiments. We agree with the Examiner's statement concerning the teachings of Ryu.

Our statement in the Decision concerning Appellants' arguments going beyond the express language of independent claim 1 merely emphasized that a generalized structure was only recited in independent claim 1. We find the language of independent claim 1 to recite an interrelationship of the layers of a semi-conductor relative to each other. Our decision finds that the Examiner has set forth a prima facie case of obviousness with respect to semi-conductor layers oriented as recited in independent claim 1, and that the language of independent claim 1 does not set forth any functional limitations with respect to the operation of the gate stack recited in the preamble of independent claim 1.

While the teachings of Ryu may disclose a situation with respect to diffusion of germanium with respect to amorphous silicon, the Examiner maintained that this was not an express teaching away from the use of amorphous silicon in place of polysilicon. We did not find error in the Examiner's reasoning and found no persuasive showing by Appellants.

Appellants argue that replacing a known element (polysilicon) with a known element (amorphous silicon) involves more than simple substitution, and that because amorphous silicon will prevent the germanium from confining additional measures it will be necessary to expedite diffusion as required by Ryu. (Request 2.) Here, Appellants opined that additional measures will be necessary, yet no evidence thereof was presented earlier nor is now presented. Furthermore, we do not find any limitation recited in the structure of independent claim 1 with which to support Appellants' argument. We find the language of independent claim 1 merely recites the

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end product (of some process), a gate stack, with the recited layers. We find that the Examiner has set forth a prima facie case of obviousness showing the recited layers and provided a reasoned statement for the combination and an explanation thereof.

Therefore, we do not agree with Appellants that our Decision misapprehended or overlooked any of the points addressed by Appellants. Therefore, we deny Appellants' request for rehearing.

CONCLUSION

In view of the foregoing, we have considered in detail Appellants' Request for Rehearing of our prior decision, but are not persuaded by the request to make any changes therein.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a). *See* 37 C.F.R. § 1.136(a)(1)(iv).

DENIED

clj

PATTERSON & SHERIDAN, LLP
3040 POST OAK BOULEVARD, SUITE 1500
HOUSTON, TX 77056