**Open Review**

( ) I would not like to sign my review report  
(x) I would like to sign my review report

Quality of English Language

( ) I am not qualified to assess the quality of English in this paper  
( ) English very difficult to understand/incomprehensible  
( ) Extensive editing of English language required  
(x) Moderate editing of English language required  
( ) Minor editing of English language required  
( ) English language fine. No issues detected

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| --- | --- | --- | --- | --- |
|  | Yes | Can be improved | Must be improved | Not applicable |
| Does the introduction provide sufficient background and include all relevant references? | ( ) | ( ) | (x) | ( ) |
| Are all the cited references relevant to the research? | ( ) | (x) | ( ) | ( ) |
| Is the research design appropriate? | ( ) | (x) | ( ) | ( ) |
| Are the methods adequately described? | ( ) | ( ) | (x) | ( ) |
| Are the results clearly presented? | ( ) | ( ) | (x) | ( ) |
| Are the conclusions supported by the results? | ( ) | (x) | ( ) | ( ) |

Comments and Suggestions for Authors

The paper describes the TCAD simulation of functional graded material for the gate dielectric in a Fin-FET geometry. The use of stacks of different high-k materials allows the tailoring of the effective dielectric constant. The authors use the simulations to determine a figure of merit, which seems to have been arbitrarily derived, without any reasoning of the various constants used in the equations.

Furthermore, there is no mention of the physical limitation that would prevent this simulated system from being physically made. The device structure as proposed here raises a number of questions:

1. At distance of 1 nm, how accurate would the deposition be, small variations in thicknesses will create large variations in k.

2. How constant are your constants, you would expect some migration of species that will alter the properties of the interface. At 1 nm thicknesses this might be quite a significant effect.

There are some major issues with the results graphs. The Silvaco figures are impossible to read as the font is too small and the lines are too thin. At the same time the rest of the results show a dashed line, that has no explanation and is physically impossible. It appears that the authors have simply connected the various points with a smoothed curve.

The introduction needs to be rewritten, it is currently a single paragraph which covers completely different areas. At the same time, the justification of the work is not found until line 152 and is completely missing from the introduction.

Section with

Some further minor issues:

-       - There should be a space between a value and the unit

-        - The decimals should be indicated using a . rather than a ,

In all the work has merit, but the paper requires some serious attention.

Comments on the Quality of English Language

The English needs to be looked at, but is not the most serious issue with the paper.

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