

Accepted Manuscript

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PII: S0169-4332(17)32748-4
DOI: <http://dx.doi.org/10.1016/j.apsusc.2017.09.099>
Reference: APSUSC 37178

To appear in: *APSUSC*

Received date: 20-7-2017
Revised date: 6-9-2017
Accepted date: 12-9-2017

Please cite this article as: {<http://dx.doi.org/>

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Influence of LaSiO_x passivation interlayer on band alignment between PEALD-Al₂O₃ and 4H-SiC determined by X-ray photoelectron spectroscopy

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Highlights

- An ultra-thin *in situ* LaSiO_x IPL was introduced between 4H-SiC and PEALD-Al₂O₃.
- Influence of LaSiO_x IPL on the band alignment across the Al₂O₃/4H-SiC interface was analyzed by XPS.
- The band alignment difference was dominated by the band bending or band shift in the 4H-SiC substrate.
- The physical details of band alignment was a good foundation for Al₂O₃ with a LaSiO_x IPL applied in 4H-SiC MOSFETs.

Abstract

The influence of lanthanum silicate (LaSiO_x) passivation interlayer on the band alignment between plasma enhanced atomic layer deposition (PEALD)-Al₂O₃ films and 4H-SiC was investigated by high resolution X-ray photoelectron spectroscopy (XPS). An ultrathin *in situ* LaSiO_x interfacial passivation layer (IPL) was introduced

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