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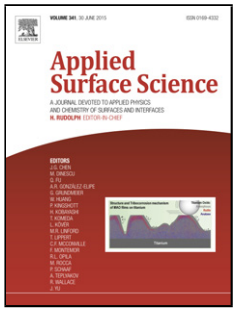

Title: Influence of $LaSiO_x$ passivation interlayer on band alignment between PEALD-Al_2O_3 and 4H-SiC determined by X-ray photoelectron spectroscopy

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Influence of $LaSiO_x$ passivation interlayer on band alignment between PEALD-Al_2O_3 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-Al_2O_3.
- Influence of $LaSiO_x$ IPL on the band alignment across the Al_2O_3/4H-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 Al_2O_3 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)-Al_2O_3 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