The impact of silicon surface pretreatment on interface structure and passivation quality of AlO_x films deposited by atomic layer deposition

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Highlights

• Low oxidation states Si surface favor AlO_6 octahedral structure, boosting Q_f.

• Weak oxidation of Si surface promotes interface Si-O-Al structure, reducing D_{it}.

• Air pretreatment before ALD AlO_x reduces J_0 in TOPCon cells, increasing V_{oc} by 3mV.

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