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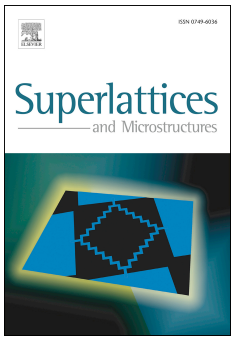

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Enhanced effect of diffused Ohmic contact metal atoms for device scaling in AlGaN/GaN heterostructure field-effect transistors

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Abstract

Using measured capacitance-voltage and current-voltage curves for the AlGaN/GaN heterostructure field-effect transistors with different source-drain spacing, the electron mobility under the gate region was obtained. By comparing mobility variation and analyzing polarization charge distribution, it is found that with device scaling, the effect of the diffused Ohmic contact metal atoms on the electron mobility is enhanced. Then, a theoretical calculation related to different scattering mechanisms was adopted and it was verified this enhanced effect is due to the enhanced polarization Coulomb field (PCF) scattering.

***Key words*—**AlGaN/GaN HFETs; diffused Ohmic contact metal atoms; polarization

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