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**Quantum-confined Stark effect in GaN/AlN quantum dots in nanowires** JULIEN RENARD, UBC, Vancouver and CEA-CNRS group Nanophysics and Semiconductors, Grenoble, R. SONGMUANG, G. TOURBOT, C. BOUGEROL, B. DAUDIN, B. GAYRAL — GaN/AlGaN heterostructures have attracted much interest in the past few years due to their potential for optoelectronic applications such as UV light emission or telecommunication wavelength intersubband devices. More recently, many studies focused on nanowire heterostructures, because such geometry is very likely to lead to a dramatic reduction of the defect density thanks to the free surface in comparison with two dimensional (2D) structures. This reduction is indeed very appealing for light emission application. It is well known that the quantum confined Stark effect strongly influences the optical properties of 2D heterostructures. In contrast, the strain reduction and the presence of the surface could potentially lead to a very different picture for nanowire heterostructures. In InGaN/GaN nanowire heterostructures, it has been shown that the QCSE is strongly reduced [1] as a consequence of the decrease of the piezoelectric polarization. We addressed this issue for GaN/AlN nanowire heterostructures and evidenced the presence of a strong QCSE [2]. This demonstrates the importance of the spontaneous polarization in nanowire heterostructures. [1] Y. Kawakami et al, Appl. Phys. Lett. 89, 163124 (2006) [2] J. Renard et al, Phys. Rev. B 80, 121305 (R) (2009)

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