

PHONON AND POLARON STATES OF ZnO/GaN
AND GaN/AlN CYLINDRICAL WIRES

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S u m m a r y

The energy of polarization phonons as a function of the wave vector as well as the polaron energy and effective mass as functions of the quantum wire radius R are determined for cylindrical quantum wires (QWs) of ZnO and GaN hexagonal crystals. It is shown that the dominant contribution to the polaron energy and the effective mass is made by quasi-longitudinal and interface phonon modes. It is established that the contribution of quasi-longitudinal phonons is determinative in the region $R > 15$ nm. The energies of QW polarons for cubic and hexagonal crystals are compared.