Turkish Journal

of

Physics

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Turkish Journal of Physics

Electrons and Phonons in GaN Semiconductor Quantum Well Devices

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Abstract: Electrons and polar optical phonons and their interactions are considered in the context of semiconductor quantum well devices, with particular reference to real quantum well laser structures. Distinction is made between wide-barrier and narrow-barrier structures and we explore the implications of these regimes for the description of the electron capture process. Special emphasis is made on the significant effects arising from the large effective mass ratio in AlN/GaN structures.

Turk. J. Phys., **23**, (1999), 529-538.
Full text: pdf
Other articles published in the same issue: Turk. J. Phys.,vol.23,iss.4.