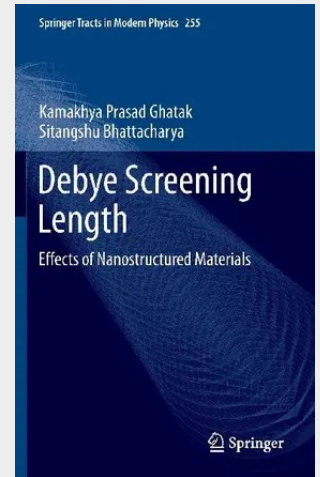


Debye Screening Length

Effects of Nanostructured Materials

This monograph solely investigates the Debye Screening Length (DSL) in semiconductors and their nano-structures. The materials considered are quantized structures of non-linear optical, III-V, II-VI, Ge, Te, Platinum Antimonide, stressed materials, Bismuth, GaP, Gallium Antimonide, II-V and Bismuth Telluride respectively. The DSL in opto-electronic materials and their quantum confined counterparts is studied in the presence of strong light waves and intense electric fields on the basis of newly formulated electron dispersion laws that control the studies of such quantum effect devices. The suggestions for the experimental determination of 2D and 3D DSL and the importance of measurement of band gap in optoelectronic materials under intense built-in electric field in nano devices and strong external photo excitation (for measuring photon induced physical properties) have also been discussed in this context. The influence of crossed electric and quantizing magnetic fields on the DSL and the DSL in heavily doped semiconductors and their nanostructures has been investigated. This monograph contains 150 open research problems which form the integral part of the text and are useful for both PhD students and researchers in the fields of solid-state sciences, materials science, nano-science and technology and allied fields in addition to the graduate courses in modern semiconductor nanostructures.

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