Uniwersytet Wrocławski

Repozytorium

Plik pochodzi z repozytorium Wydziału Chemii Uniwersytetu Wrocławskiego

Many particle approach to excitons in crystals: electron-electron and electron-phonon interactions.

Autorzy

Anatoly M. Yaremko

V. M. Dzhagan

V. O. Yukhymchuk

T. L. Linnik

Henryk Ratajczak

Jan Baran

Austin J. Barnes

Rok wydania

2010

Czasopismo

Journal of Molecular Structure

Numer woluminu

976

Strony

205-214

DOI

10.1016/j.molstruc.2010.03.086

Kolekcja

Naukowa

Język

Angielski

Typ publikacji

Artykuł

Streszczenie

A many particle system of electrons interacting one with another and also with the crystal lattice vibrations was studied theoretically. The particular diagonalization of the Hamiltonian was fulfilled and it was shown that the structure of bands (exciton structure) in the absorption spectra of the crystal is really the set of electron–phonon maxima. Numerical calculations showed also that full electron bands, valence and conductivity, are responsible for the formation of exciton maxima and even states located far from the edge of zones have significant effect on the occurrence of exciton peaks – which is in disagreement with the effective mass approximation (EMA). The results are compared with known experimental data for wide band ZnO and CdS crystals.

Słowa kluczowe

Crystals, Electron–electron interactions, Electron–phonon interactions, Exciton structure, Many particle approach

Adres publiczny

https://doi.org/10.1016/j.molstruc.2010.03.086

Strona internetowa wydawcy

http://www.elsevier.com

Plik został wygenerowany dnia 2026-04-27 16:45:01
Adres w repozytorium https://old.chem.uni.wroc.pl/pl/repozytorium/upohsKz.