

## **II–VI compounds**

crystal structure, space group and lattice parameters of IIA–VIB compounds

crystal structure, space group and lattice parameters of IIB–VIB compounds

lattices occurring in II–VI compounds

high temperature and high pressure phases, phase diagrams

physical properties of Mg, Ca and Ba sulfide

chemical bond in II–VI compounds

**beryllium compounds (Be-VI)**

general properties

**beryllium oxide (BeO)**

electronic properties

impurities and defects

lattice properties

transport and optical properties

optical properties

further properties

**beryllium sulfide (BeS)**

physical properties

**beryllium selenide (BeSe)**

physical properties

**beryllium telluride (BeTe)**

physical properties

## **magnesium oxide (MgO)**

band structure

energy gap, interband transition energies

impurities and defects

crystal structure, lattice parameters, thermal expansion

phonon dispersion and phonon frequencies

sound velocities

elastic moduli

Young's, shear and bulk moduli, Poisson's ratio

compressibility, Grüneisen parameter, effective ion charge

electrical and thermal transport properties

dielectric constants, optical and photoelectric properties

magnetic properties

Debye temperature, heat capacity, density, melting and boiling points, hardness

thermodynamic parameters

physical properties (MgS)

physical properties (MgSe)

physical properties (MgTe)

**calcium oxide (CaO)**

band structure

energy gap, interband transition energies

effective and polaron masses, Fröhlich coupling constant

impurities and defects

crystal structure, lattice parameters, thermal expansion

phonon dispersion and phonon frequencies

sound velocities, elastic moduli

Young's, shear and bulk modulus, Poisson's ratio

compressibility, Grüneisen parameter, effective ion charge

electrical and thermal transport properties

dielectric constants, optical properties

magnetic properties

Debye temperature, heat capacity, density, melting and boiling points, hardness

thermodynamic properties

**strontium oxide (SrO)**

band structure, energy gap  
effective and polaron masses, Fröhlich coupling constant  
impurities and defects  
crystal structure, lattice parameters, thermal expansion  
phonon dispersion and phonon frequencies  
sound velocities, elastic moduli  
Young's, shear and bulk modulus, Poisson's ratio  
compressibility, Grüneisen parameter, effective ion charge  
electrical and thermal transport properties  
dielectric constants, optical and photoelectric properties  
magnetic properties  
Debye temperature, heat capacity, density, melting and boiling points, hardness  
thermodynamical properties

**barium oxide (BaO)**

band structure, energy gap  
effective masses, Fröhlich coupling constant  
impurities and defects  
crystal structure, lattice parameters, thermal expansion  
phonon dispersion and phonon frequencies  
sound velocities, elastic moduli  
bulk modulus, effective ion charge  
electrical and thermal transport properties  
dielectric constants, optical and photoelectric properties  
magnetic properties  
Debye temperature, heat capacity, density, melting and boiling points  
thermodynamical properties

## **zinc oxide (ZnO)**

- band structure
- energies of symmetry points of the band structure
- energy gaps
- excitons, general
- exciton transition energies
- further exciton data
- special exciton parameters
- biexcitons
- splitting energies
- electron effective masses
- hole effective masses,  $g$ -factors
- deformation potentials
- ionization energies of donors
- ionization energies of shallow impurities
- ionization energies of deep impurities
- deep impurity inner transition energies
- Zeeman behavior of impurity transitions
- isotope shift effects of impurity transitions
- quantum efficiencies  $\eta$  and decay times  $\tau$  of impurity transitions
- energy of traps possibly due to acceptors and donors
- excitons bound to neutral acceptors
- excitons bound to neutral donors
- diffusion coefficients
- wavenumbers of absorption peaks
- ESR spectra
- bound excitons

effective  $g$ -values of bound excitons  
crystal structure, lattice parameters  
distances, ionic radii, further lattice parameters  
thermal expansion  
effective ionic charge  
phonon dispersion and related parameters  
phonon wavenumbers: fundamental modes  
phonon wavenumbers: combination modes  
Raman and surface phonon wavenumbers  
sound velocities  
elastic moduli and compliances, bulk modulus, compressibility and related parameters  
piezoelectrical strain and stress coefficients  
electromechanical coupling factor  
pyroelectric constants  
electronic conductivity and photoconductivity  
resistivity, mobility  
thermoelectric power  
surface conductivity  
thermal conductivity  
optical properties and spectra  
refractive index  
isotropic wavelength  
dielectric constants  
electrooptical constants  
light absorption in crystals with admixtures  
nonlinear optical properties  
magnetic susceptibility  
Debye temperature, heat capacity, density, melting point, vapor pressure, hardness  
thermodynamical properties



## **zinc sulfide (ZnS)**

band structure, cubic modification  
energy gap, cubic modification  
exciton energies, cubic modification  
exciton and electron-hole liquid binding energies, cubic modification  
Fröhlich and exciton-phonon coupling constants cubic modification  
critical point and interband transition energies, cubic modification  
spin-orbit splitting,  $g$ -factor, cubic modification  
effective masses, cubic modification  
deformation potential,  $k$ -linear term, cubic modification  
band structure, hexagonal modification  
energy gap, hexagonal modification  
exciton energies, hexagonal modification  
interband transition energies, hexagonal modification  
crystal field and spin-orbit splitting,  $g$ -factor, hexagonal modification  
effective masses, Luttinger parameters, hexagonal modification  
energy states of imperfections and impurities, general remarks  
shallow donors, ionization energies and  $g$ -values  
shallow acceptor energies  
ionization energies of deep impurities  
ionization energies of deep impurities (further data prior to 1980)  
deep impurity inner transition energies  
crystal field splitting parameter  $Dq$  and Racah parameter  $B$  of 3d impurities  
property: Zeeman behavior of impurity transitions  
isotope shift effects of impurity transitions  
pressure coefficients of impurity transitions  
quantum efficiencies  $\eta$  and decay times  $\tau$  of impurity transitions  
energy and capture cross section  $\sigma$  of traps possibly due to acceptors and donors  
emission energies (maxima of emission bands) of impurity-related transitions

native defects: general  
native defects: special defects  
impurities in ZnS: scandium  
impurities in ZnS: titanium  
impurities in ZnS: vanadium  
impurities in ZnS: chromium  
impurities in ZnS: manganese  
impurities in ZnS: iron  
impurities in ZnS: cobalt  
impurities in ZnS: nickel  
impurities in ZnS: copper  
ground state properties of rare-earth ions  
impurities in ZnS: other substitutional impurities  
impurities in ZnS: associates  
impurities in ZnS: further associated defects  
property: impurity (defect) bound excitons  
crystal structure, modifications  
lattice parameter, cubic modification  
lattice parameter, hexagonal modification  
lattice parameter, polytypic ZnS and other modifications  
transformation temperature and pressure  
thermal expansion  
interatomic distances, covalent and ion radii

effective charges  
electronic polarizability, ionicity  
phonon dispersion  
phonon wavenumbers, mean square displacements, cubic modification  
phonon wavenumbers, hexagonal modification  
phonon wavenumbers, polytypic ZnS(4H)  
Raman frequencies and wavenumbers  
surface optical phonon wavenumber, cubic modification  
sound velocities  
elastic moduli, cubic modification  
elastic moduli, hexagonal modification  
elastic compliances, cubic modification  
elastic compliances, hexagonal modification  
elastic moduli, pressure dependence  
bulk modulus  
compressibility, effective charges  
third-order elastic constants, Young's modulus, Poisson's ratio, Grüneisen parameters  
electromechanical coupling coefficients  
internal strain, piezoelectric strain and stress constants  
(photo)conductivity, resistivity, cubic modification  
carrier mobilities, magnetoresistance, diffusion length, cubic modification

thermal conductivity  
optical properties  
refractive index, cubic modification  
refractive index, hexagonal modification  
refractive index, polycrystalline ZnS  
bulk-photovoltaic effect, thin films  
dielectric constant, cubic modification  
dielectric constant, hexagonal modification  
electrooptical constants  
elasto-optical and piezo-optical constants  
third order elasto-optical constants  
nonlinear optical coefficients  
photodielectric effect  
energy efficiency of cathodoluminescence  
electron yield, electron affinity  
photoelectric threshold, work function  
plasmon energy of valence band electrons  
absorption and reflection in the uv and ir regions  
Raman and Faraday effects, multi-phonon spectra  
visible luminescence of ZnS  
Debye temperature  
heat capacity  
molar weight and volume, isotopic abundances  
hardness, density  
melting point  
vapor pressure, heat of vaporization  
thermodynamical parameters

## **zinc selenide (ZnSe)**

- band structure
- energies at symmetry points of the band structure
- energy gap
- exciton energies
- temperature and pressure dependence of exciton energies
- further exciton parameters
- interband transition energies
- spin-orbit splitting energies
- free carrier effective masses, Fröhlich coupling constant
- exciton reduced masses and other exciton parameters
- Luttinger parameters, exchange parameter
- $g$ -factors
- oscillator strengths
- exciton Rydberg energy
- electron-hole interaction parameter
- $k$ -linear term, deformation potentials
- shallow donors, ionization energies
- shallow donor, excitation energies
- chemical and  $g$ -values of shallow impurities
- shallow acceptor ionization energies
- shallow acceptor excitation energies
- further data on shallow impurities
- emission energies
- zero-phonon lines

bound exciton transition and binding energies  
bound exciton emission peaks  
decay times of acceptor-bound-exciton luminescence  
splitting and g-values of bound excitons  
excitons bound to neutral donors  
transitions into excited electronic states of donor-bound-exciton complexes  
decay times of bound-exciton luminescence  
pressure dependence of bound excitons  
emission band maxima  
energy and capture cross section  $\sigma$  of traps possibly due to acceptors and donors  
ionization energies of deep impurities  
deep impurity inner transition energies  
pressure coefficients and quantum efficiencies of impurity transitions  
3d impurity emission lines  
3d impurity crystal field splitting  
impurity g-values  
spin Hamiltonian parameters  
crystal structure, modifications  
properties of the rocksalt modification  
lattice parameter, thermal expansion  
ionic radii, effective charges

phonon dispersion  
phonon energies  
phonon frequencies  
pressure dependence of phonon wavenumbers  
energies of local modes  
sound velocities  
elastic moduli and compliances  
compressibility, piezoelectric stress and strain  
Young's, shear and bulk moduli  
Grüneisen parameters  
electrical (photo)conductivity and resistivity  
free carrier mobilities, Hall coefficient and magnetoresistance  
charge carrier and ion diffusion  
thermoelectric power, thermal conductivity  
refractive index  
absorption coefficient  
dielectric constants  
Verdet constant  
Cotton-Mouton effect, electrooptic and photoelastic coefficients  
nonlinear optical properties  
radiation damage  
magnetic properties  
Debye temperature, heat capacity, Schottky barrier heights  
density, melting point, hardness  
thermodynamical properties

## **zinc telluride (ZnTe)**

band structure, band energies  
energy gap  
exciton energies  
critical point energies, spin-orbit splitting  
effective masses  
Fröhlich coupling constant,  $g$ -factors  
diamagnetic shift,  $k$ -linear term  
Luttinger parameters, deformation potentials  
shallow acceptor and donor energies  
deep impurities  
bound excitons  
crystal structure, lattice parameters, thermal expansion  
effective charges  
phonon dispersion, phonon frequencies and related data  
sound velocities, elastic moduli, bulk modulus, compressibility  
Grüneisen parameters, internal strain parameter, piezoelectric constant, effective charges  
electrical and thermal transport, carrier mobilities  
dielectric constants  
refractive index, absorption, luminescence  
piezoelectric stress coefficient, photoelastic constants, electrooptic coefficient  
nonlinear optical properties  
heat capacity, Debye temperature, density, melting point, hardness  
thermodynamical properties



**cadmium oxide (CdO)**

band structure

band energies at symmetry points

energy gap

interband transition energies

effective masses,  $g$ -factor and related parameters

impurities and defects

crystal structure, lattice parameters, thermal expansion

phonon properties and frequencies, effective ion charge

transport properties, carrier mobilities

optical and photoelectric properties, dielectric constants, plasmon energy

magnetic properties

Debye temperature, heat capacity, melting point, density

thermodynamic properties, vapor pressure, phase diagram

## **cadmium sulfide (CdS)**

band structure, hexagonal modification  
valence band energies, hexagonal modification  
energy gaps, hexagonal modification  
splitting parameters, hexagonal modification  
 $k$ -linear terms, hexagonal modification  
energy gap pressure and temperature coefficients, hexagonal modification  
interband transition energies, hexagonal modification  
deformation potentials, hexagonal modification  
free carrier effective masses, hexagonal modification  
 $g$ -factors, hexagonal modification  
diamagnetic shift, Luttinger parameter, deformation potentials,  
free excitons, hexagonal modification  
further exciton energies, hexagonal modification  
exciton polaritons: A-exciton, hexagonal modification  
exciton polaritons: B-exciton, hexagonal modification  
dense exciton systems, hexagonal modification  
biexciton energy, hexagonal modification  
electron-hole liquids, highly excited CdS, hexagonal modification  
further exciton data, exciton-phonon coupling, oscillator strengths and other parameters  
band structure, energy gap, cubic modification  
interband transition energies and effective masses, cubic modification  
band structure, zincblende modification  
ionization and excitation energies of impurities and defects  
capture cross-sections of impurities  
further data on impurities  
impurity (defect) bound excitons  
donor-acceptor pairs transitions

crystal structure, modifications  
lattice parameters, thermal expansion  
phonon dispersion  
phonon wavenumbers, mean square displacements  
Raman wavenumbers  
local modes  
sound velocities and absorption  
elastic moduli and compliances  
piezoelectric stress and strain coefficients  
electromechanical coupling factor  
vibrational amplitudes, bulk modulus  
compressibilities, Grüneisen parameters, effective charges  
transport mechanism  
intrinsic conductivity and carrier concentrations  
electrical and thermal conductivity, resistivity, magnetoresistance  
photoconductivity  
electron mobilities  
hole mobilities  
diffusion of carriers and ions  
Seebeck and Nernst coefficient  
optical properties (general), refractive index and birefringence, Sellmeier coefficients  
absorption coefficient, reflectance  
dielectric constants  
Verdet constant  
photoelastic coefficient, nonlinear optics  
two photon absorption  
optical rectification and bistability  
linear and quadratic electrooptic coefficients  
Schottky barrier heights  
optical and ESR spectra of iron-group-element-impurities  
magnetic properties  
Debye temperature, heat capacity, density, melting point, hardness  
thermodynamic properties, vapor pressure, phase diagram

## **cadmium selenide (CdSe)**

band structure, hexagonal modification  
energy gaps, hexagonal modification  
valence band splitting parameters, hexagonal modification  
energy gap, temperature and pressure coefficients, hexagonal modification  
interband transition energies, hexagonal modification  
Luttinger parameters, deformation potentials, hexagonal modification  
effective masses, Fröhlich coupling constant, hexagonal modification  
g-factors, hexagonal modification  
exciton energies, hexagonal modification  
excitonic polaritons, oscillator strengths, biexcitons, hexagonal modification  
dense exciton systems, hexagonal modification  
electronic properties, cubic modification  
electronic properties, zincblende modification  
impurities and defects: ionization energies  
further data on shallow and deep impurities  
impurity bound excitons  
crystal structure, modifications  
lattice parameters, thermal expansion  
phonon dispersion  
phonon wavenumbers, mean square displacements  
local mode wavenumbers  
sound velocities  
elastic moduli  
piezoelectric strain and stress coefficients, electromechanical coupling factor  
Young's and bulk modulus, compressibility, effective charges

electrical transport  
electrical conductivity, carrier concentration, magnetoresistance  
photoconductivity and thermal conductivity  
electron mobilities  
hole mobility, carrier and ion diffusion  
thermoelectric power  
optical properties, general, refractive index  
isotopic wavelength, Sellmeier coefficients  
refractive index, birefringence  
absorption, reflection, luminescence  
dielectric constants  
two photon absorption  
optical and ESR spectra of iron-group element impurities  
electrooptic and non-linear coefficients  
magnetic properties  
Debye temperature, heat capacity, density, melting point, hardness  
thermodynamical properties, phase diagram

## **cadmium telluride (CdTe)**

band structure  
band energies at symmetry points  
energy gap  
critical point and splitting energies  
effective masses  
*g*-factors, *k*-linear terms  
Kane and Luttinger parameters of valence band, polaron coupling constant  
deformation potentials  
excitons  
impurities and defects: ionization energies  
intrinsic defects and defect complexes  
property: energy position and capture cross sections ( $\sigma$ ) of traps  
bound excitons, donor-acceptor pairs  
crystal structure, modifications  
lattice parameter, thermal expansion  
phonon dispersion, phonon frequencies and wavenumbers, local modes  
mean square displacements  
sound velocities, elastic moduli  
bulk modulus, compressibility, ionicity, effective ion charge  
Grüneisen parameter, stress and strain coefficient  
electrical and thermal transport, carrier mobilities  
optical properties, refractive index, dielectric constants, two-photon absorption  
Debye temperature, heat capacity, density, melting point, hardness  
thermodynamic properties, vapor pressure, phase diagram

**mercury oxide (HgO)**

crystal structure, physical properties

**mercury sulfide (HgS)**

crystal structure, modifications

band energies, impurities:  $\alpha$ -HgS (trigonal) (red cinnabar)

lattice properties:  $\alpha$ -HgS (trigonal) (red cinnabar)

transport properties:  $\alpha$ -HgS (trigonal) (red cinnabar)

optical properties, dielectric constants:  $\alpha$ -HgS (trigonal) (red cinnabar)

crystal structure, lattice parameters, bulk modulus:  $\beta$ -HgS (zincblende structure)

band structure, energy gap, effective masses:  $\beta$ -HgS (zincblende structure)

further lattice properties:  $\beta$ -HgS (zincblende structure)

transport, optical and further properties:  $\beta$ -HgS (zincblende structure)

Debye temperature, heat capacity, melting point, density, hardness

thermodynamic properties

**mercury selenide (HgSe)**

band structure, energy gap  
interband transition and splitting energies, effective masses,  $g$ -factor  
Luttinger and Kane parameters of the valence band  
impurities and defects  
crystal structure, lattice parameters  
phonon dispersion and phonon wavenumbers  
elastic moduli  
effective charge, bulk modulus, compressibility  
electrical conductivity, electron mobility  
optical properties, dielectric constants  
Debye temperature, heat capacity, melting point, density, hardness  
thermodynamical properties, vapor pressure, phase diagram



**mercury telluride (HgTe)**

band structure, band energies at symmetry points  
energy gap  
critical point energies  
spin-orbit splitting,  $k$ -linear term  
effective masses  
 $g$ -factors  
Luttinger and Kane parameters  
impurities and defects  
crystal structure, modifications  
lattice parameters  
thermal expansion  
phonon dispersion, phonon energies and wavenumbers  
elastic moduli, sound velocity  
bulk modulus, effective charge, Grüneisen parameter  
electrical transport, conductivity, mobility  
optical properties, dielectric constants  
Debye temperature, melting point, density, heat capacity, hardness  
thermodynamical properties, vapor pressure, phase diagram

## **solid solutions of II–VI compounds**

properties of IIA–VIB compounds

### **ZnS<sub>1-x</sub>Se<sub>x</sub>**

electronic properties  
impurities and defects  
lattice properties  
transport properties  
optical properties

### **ZnS<sub>1-x</sub>Te<sub>x</sub>**

physical properties

### **ZnSe<sub>x</sub>Te<sub>1-x</sub>**

electronic properties  
impurities and defects  
transport and optical properties

### **CdS<sub>1-x</sub>Se<sub>x</sub>**

electronic properties  
impurities and defects, lattice and transport properties  
optical properties

### **CdS<sub>1-x</sub>Te<sub>x</sub>**

physical properties

### **CdSe<sub>x</sub>Te<sub>1-x</sub>**

electronic properties  
impurities and defects  
transport and optical properties

### **$\text{Zn}_x\text{Cd}_{1-x}\text{O}$**

physical properties

### **$\text{Zn}_x\text{Cd}_{1-x}\text{S}$**

electronic properties  
impurities and defects  
lattice parameters, phase diagrams  
transport properties  
optical properties

### **$\text{Zn}_x\text{Cd}_{1-x}\text{Se}$**

electronic properties  
impurities and defects  
transport properties  
optical properties

### **$\text{Zn}_x\text{Cd}_{1-x}\text{Te}$**

electronic properties  
impurities and defects  
lattice properties  
transport properties  
optical properties

### **$\text{Zn}_{1-y}\text{Cd}_y\text{S}_x\text{Se}_{1-x}$**

physical properties

### **$\text{Zn}_{1-y}\text{Cd}_y\text{Se}_x\text{Te}_{1-x}$**

physical properties

**Cd(Te,Se,S)**

physical properties

**Zn(Te,Se,S)**

physical properties

**Zn<sub>x</sub>Hg<sub>1-x</sub>Se**

physical properties

**Hg<sub>1-x</sub>Zn<sub>x</sub>Te**

physical properties

**Hg<sub>1-x</sub>Cd<sub>x</sub>Se**

electronic properties

lattice properties

transport and optical properties

**Hg<sub>1-x</sub>Cd<sub>x</sub>Te**

band structure, energy gap

interband transition energies, further band parameters

effective masses

impurity levels

lattice properties

transport properties

optical properties

## **I–VII compounds**

comparative tables on crystal structure of phases at normal conditions  
comparative tables on crystal structure of high temperature phases  
chemical bond, disorder and melting

## **cuprous fluoride (CuF)**

physical properties

## **cuprous chloride ( $\gamma$ -CuCl)**

band structure

energy gaps

critical point energies

exciton energies, oscillator strength, polariton dispersion

transition energies to higher excited exciton states

exciton splitting energies

spin-orbit splitting energies

exchange energies

exciton radii and binding energy

biexcitons

free carrier effective masses

exciton effective masses

*g*-factors

deformation potentials

localized excitons

further remarks to electronic properties

electronic properties of NaCl-type CuCl

crystal structure, space group

lattice parameter, thermal expansion, compressibility

phonon dispersion

phonon frequencies, wavenumbers and related data

mean square displacements, Debye-Waller factors, line widths

elastic moduli, mode Grüneisen parameters, effective charges

compressibility, bulk modulus, internal strain parameter

ambipolar diffusion of excitons

ionic conductivity

optical properties, dielectric constants, refractive index

piezoelectric stress coefficient

electrooptic and piezooptic constants, piezobirefringence

second-order nonlinear dielectric susceptibility

third-order nonlinear dielectric susceptibility; electromagnetic coupling constant

magnetic susceptibility

Debye temperature, melting point, density

## **cuprous bromide ( $\gamma$ -CuBr)**

band structure, energy gaps  
exciton energies  
higher exciton states  
edge exciton energies  
exciton splitting energies  
spin-orbit splitting energy  
exciton exchange energies  
exciton radii, binding energies and other exciton parameters  
effective masses  
biexciton parameters  
Luttinger parameters,  $g$ -factors  
deformation potentials  
electronic properties of NaCl-type CuBr  
crystal structure, high-pressure modifications  
lattice parameters, thermal expansion  
phonon dispersion and frequencies, Debye-Waller factor  
elastic moduli  
compressibility, bulk modulus, internal strain, Grüneisen parameter, effective charges  
ionic conductivity  
dielectric constants, refractive index  
birefringence, electrooptic and elastooptic constants  
second order nonlinear parameters  
magnetic susceptibility  
Debye temperature, heat capacity, melting point, density

**cuprous iodide ( $\gamma$ -CuI)**

band structure, energy gap  
exciton transition and splitting energies  
spin-orbit splitting energy  
exciton radii, binding energy and other exciton parameters  
effective masses  
 $g$ -factors  
deformation potentials  
electronic properties of NaCl-type CuI  
crystal structure, high pressure modifications  
lattice parameters, thermal expansion  
phonon dispersion and frequencies and related data, Debye-Waller factors  
elastic moduli, compressibility, bulk modulus, internal strain, Grüneisen  
parameter, effective charge  
ionic conductivity  
dielectric constants, refractive index  
birefringence, piezoelectric, piezooptic and other optical constants  
magnetic susceptibility  
Debye temperature, heat capacity, melting point, density



**silver monofluoride (AgF)**

characterization, band structure and energies  
crystal structure, lattice parameters, phonon frequencies  
dielectric constants, refractive index  
Debye temperature, melting point, density

**silver chloride (AgCl)**

band structure  
energy gaps, indirect edge  
deformation potential  
exciton binding energy, exchange interaction,  $g$ -factor  
energy gaps, direct edge  
effective masses, further band parameters  
further remarks to band structure  
impurities and intrinsic defects: bound excitons  
impurities and intrinsic defects: infrared absorption spectra  
impurities and intrinsic defects: transient infrared absorption spectra  
impurities and intrinsic defects: self-trapped exciton and hole state (STE, STH)  
impurities and intrinsic defects: ODMR spectra  
crystal structure, lattice parameters, thermal expansion  
phonon dispersion, frequencies and wavenumbers  
elastic moduli and compliances  
bulk modulus, compressibility, mode Grüneisen parameters  
electrical and thermal transport  
refractive index, dielectric constants  
reflectivity, luminescence  
Debye temperature, heat capacity, melting point, density

## **silver bromide (AgBr)**

- band structure
- band gap, indirect edge
- exciton energies
- g*-factors
- band gap, direct edge
- effective masses
- deformation potentials and related parameters
- biexciton parameters
- further remarks to electronic properties
- impurities and intrinsic defects: bound excitons
- impurities and intrinsic defects: infrared absorption spectra
- impurities and intrinsic defects: transient infrared absorption spectra
- crystal structure, high pressure modifications, lattice parameters, thermal expansion
- phonon dispersion
- phonon frequencies and wavenumbers, Debye-Waller factors and related data
- elastic moduli and compliances
- Grüneisen parameters, bulk modulus, compressibility
- electrical and ionic transport properties
- optical properties, dielectric constants
- Debye temperature, heat capacity, melting point, density
- physical properties of  $\text{AgBr}_{1-x}\text{Cl}_x$  and  $\text{AgBr}_{1-x}\text{I}_x$  mixed crystals

## **silver iodide (AgI)**

band structure, energy gaps:  $\beta$ -AgI (wurtzite)  
edge exciton transition energies:  $\beta$ -AgI (wurtzite)  
transitions to higher excited exciton states:  $\beta$ -AgI (wurtzite)  
spin-orbit, crystal field and longitudinal–transverse splitting energies ( $\beta$ -AgI)  
exciton radius and binding energies  
effective and reduced masses  
electronic properties of  $\gamma$ -AgI (zincblende)  
electronic properties of f.c.c.-AgI (NaCl-type)  
crystal structure, high pressure modifications, lattice parameters  
phonon dispersion and frequencies, Debye-Waller factors  
sound velocities, elastic moduli and compliances, compressibility and related data  
lattice properties of  $\gamma$ -AgI and f.c.c.-AgI  
ionic transport and related properties  
dielectric constants  
piezoelectric stress coefficient  
far-infrared reflectivity and transmission  
Debye temperature, melting point, density, heat capacity  
 $\text{AgBr}_{1-x}\text{I}_x$ ,  $\text{AgI}_{1-x}\text{Cl}_x$  and  $\text{Ag}_x\text{Cu}_{1-x}\text{I}$  mixed crystals

**semimagnetic semiconductors**

composition and crystal structure of ternary bulk semimagnetic semiconductors  
definitions, general properties, structure, general remarks  
general remarks and important formulae for narrow gap semiconductors  
general remarks and important formulae for wide gap semiconductors

**mercury manganese telluride –  $\text{Hg}_{1-x}\text{Mn}_x\text{Te}$** 

band structure, general  
band structure parameters  
effective mass,  $g$ -factor, exchange constants  
impurities  
lattice properties, dielectric constants  
transport mechanisms, insulator-metal transition  
optical and magnetic properties

**mercury manganese selenide –  $\text{Hg}_{1-x}\text{Mn}_x\text{Se}$** 

electronic properties  
transport and magnetic properties

**mercury manganese sulfide –  $\text{Hg}_{1-x}\text{Mn}_x\text{S}$** 

physical properties

**cadmium manganese telluride –  $\text{Cd}_{1-x}\text{Mn}_x\text{Te}$**

electronic properties

lattice, transport and magnetic properties

**cadmium manganese selenide –  $\text{Cd}_{1-x}\text{Mn}_x\text{Se}$**

physical properties

**cadmium manganese sulfide –  $\text{Cd}_{1-x}\text{Mn}_x\text{S}$**

physical properties

**zinc manganese telluride –  $\text{Zn}_{1-x}\text{Mn}_x\text{Te}$**

physical properties

**zinc manganese selenide -  $\text{Zn}_{1-x}\text{Mn}_x\text{Se}$**

physical properties

**zinc manganese sulfide –  $\text{Zn}_{1-x}\text{Mn}_x\text{S}$**

physical properties

**quaternary alloys of II-VI semiconductors with Mn**

physical properties

**II-VI semimagnetic semiconductors with transition metal ions other than Mn**

general properties

**mercury iron telluride ( $\text{Hg}_{1-x}\text{Fe}_x\text{Te}$ )**

physical properties

**mercury iron selenide ( $\text{Hg}_{1-x}\text{Fe}_x\text{Se}$ )**

physical properties

**mercury iron sulfide ( $\text{Hg}_{1-x}\text{Fe}_x\text{S}$ )**

physical properties

**cadmium iron telluride ( $\text{Cd}_{1-x}\text{Fe}_x\text{Te}$ )**

physical properties

**cadmium iron selenide ( $\text{Cd}_{1-x}\text{Fe}_x\text{Se}$ )**

physical properties

**cadmium iron sulfide ( $\text{Cd}_{1-x}\text{Fe}_x\text{S}$ )**

physical properties

**zinc iron telluride ( $\text{Zn}_{1-x}\text{Fe}_x\text{Te}$ )**

physical properties

**zinc iron selenide ( $\text{Zn}_{1-x}\text{Fe}_x\text{Se}$ )**

physical properties

**zinc iron sulfide ( $\text{Zn}_{1-x}\text{Fe}_x\text{S}$ )**

physical properties

**mercury cobalt selenide ( $\text{Hg}_{1-x}\text{Co}_x\text{Se}$ )**

physical properties

**cadmium cobalt telluride ( $\text{Cd}_{1-x}\text{Co}_x\text{Te}$ )**

physical properties

**cadmium cobalt selenide ( $\text{Cd}_{1-x}\text{Co}_x\text{Se}$ )**

physical properties

**cadmium cobalt sulfide ( $\text{Cd}_{1-x}\text{Co}_x\text{S}$ )**

physical properties

**zinc cobalt telluride ( $\text{Zn}_{1-x}\text{Co}_x\text{Te}$ )**

physical properties

**zinc cobalt selenide ( $\text{Zn}_{1-x}\text{Co}_x\text{Se}$ )**

physical properties

**zinc cobalt sulfide ( $\text{Zn}_{1-x}\text{Co}_x\text{S}$ )**

physical properties

**mercury chromium selenide ( $\text{Hg}_{1-x}\text{Cr}_x\text{Se}$ )**

physical properties

**cadmium chromium telluride ( $\text{Cd}_{1-x}\text{Cr}_x\text{Te}$ )**

physical properties

**cadmium chromium sulfide ( $\text{Cd}_{1-x}\text{Cr}_x\text{S}$ )**

physical properties

**zinc chromium telluride ( $\text{Zn}_{1-x}\text{Cr}_x\text{Te}$ )**

physical properties

**zinc chromium selenide ( $\text{Zn}_{1-x}\text{Cr}_x\text{Se}$ )**

physical properties

**zinc chromium sulfide ( $\text{Zn}_{1-x}\text{Cr}_x\text{S}$ )**

physical properties



#### **IV-VI semimagnetic semiconductors with Mn, Eu and Gd**

general properties

##### **lead manganese telluride – $\text{Pb}_{1-x}\text{Mn}_x\text{Te}$**

physical properties

##### **lead manganese selenide – $\text{Pb}_{1-x}\text{Mn}_x\text{Se}$**

physical properties

##### **lead manganese sulfide – $\text{Pb}_{1-x}\text{Mn}_x\text{S}$**

physical properties

##### **lead tin manganese selenide ( $\text{Pb}_{1-x-y}\text{Sn}_y\text{Mn}_x\text{Se}$ )**

physical properties

##### **tin manganese telluride – $\text{Sn}_{1-x}\text{Mn}_x\text{Te}$**

physical properties

##### **germanium manganese telluride – $\text{Ge}_{1-x}\text{Mn}_x\text{Te}$**

physical properties

**lead tin manganese telluride ( $\text{Pb}_{1-x-y}\text{Sn}_y\text{Mn}_x\text{Te}$ )**

physical properties

**lead europium telluride ( $\text{Pb}_{1-x}\text{Eu}_x\text{Te}$ )**

physical properties

**lead europium selenide ( $\text{Pb}_{1-x}\text{Eu}_x\text{Se}$ )**

physical properties

**lead europium sulfide ( $\text{Pb}_{1-x}\text{Eu}_x\text{S}$ )**

physical properties

**lead gadolinium telluride ( $\text{Pb}_{1-x}\text{Gd}_x\text{Te}$ )**

physical properties

**tin gadolinium telluride ( $\text{Sn}_{1-x}\text{Gd}_x\text{Te}$ )**

physical properties

**indium manganese arsenide ( $\text{In}_{1-x}\text{Mn}_x\text{As}$ )**

physical properties

**gallium manganese arsenide ( $\text{Ga}_{1-x}\text{Mn}_x\text{As}$ )**

physical properties

## **II-V manganese compounds**

general remarks

### **cadmium manganese arsenide ( $\text{Cd}_{1-x}\text{Mn}_x$ )<sub>3</sub>As<sub>2</sub>**

physical properties

### **zinc manganese arsenide ( $\text{Zn}_{1-x}\text{Mn}_x$ )<sub>3</sub>As<sub>2</sub>**

physical properties

II-VI and I-VII Compounds; Semimagnetic Compounds  
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