Landolt-Börnstein Substance/Property Index

III/41: Semiconductors
(revised and extended contents of the volumes III/17 and III/22)

Subvolume III/41A1: Group IV elements, IV-IV and III-V compounds

General Introduction

List of substances

Group IV elements

diamond (C)  grey tin (α-Sn)
silicon (Si)  silicon carbide (SiC)
germanium (Ge)  silicon-germanium mixed crystals (Si\(_x\) Ge\(_{1-x}\))

III-V compounds

boron nitride (BN)  gallium nitride (GaN)
boron phosphide (BP)  gallium phosphide (GaP)
boron arsenide (BAs)  gallium arsenide (GaAs)
boron antimonide (BSb)  gallium antimonide (GaSb)
aluminum nitride (AlN)  indium nitride (InN)
aluminum phosphide (AlP)  indium phosphide (InP)
aluminum arsenide (AlAs)  indium arsenide (InAs)
aluminum antimonide (AlSb)  indium antimonide (InSb)

Solid solutions between III-V compounds

General remarks

B\(_x\) Ga\(_{1-x}\) N  AlN\(_x\) P\(_{1-x}\)
B\(_x\) Ga\(_{1-x}\) P  AlAs\(_{1-x}\) P\(_x\)
B\(_x\) Ga\(_{1-x}\) As  GaN\(_x\) As\(_{1-x}\)
B\(_x\) In\(_{1-x}\) N  GaAs\(_x\) Sb\(_{1-x}\)

Al\(_x\) Ga\(_{1-x}\) P  GaP\(_x\) As\(_{1-x}\)
Al\(_x\) In\(_{1-x}\) As  GaP\(_x\) Sb\(_{1-x}\)
Al\(_x\) Ga\(_{1-x}\) As  InP\(_x\) As\(_{1-x}\)
Al\(_x\) In\(_{1-x}\) P  InP\(_x\) Sb\(_{1-x}\)
Ga\(_x\) In\(_{1-x}\) Sb  InAs\(_x\) Sb\(_{1-x}\)
Ga\(_x\) In\(_{1-x}\) P  InBi\(_x\) As\(_{1-x}\)
Ga\(_x\) In\(_{1-x}\) As  InBi\(_x\) Sb\(_{1-x}\)
Ga\(_x\) In\(_{1-x}\) Sb  In\(_{1-x}\) Sb, As

Ga\(_x\) In\(_{1-x}\) Sb
Quaternary alloys of the type III$_x$-V$_{1-x}$-V$_y$-V$_{1-y}$

**General remarks**

\[
\text{Al}_x \text{Ga}_{1-x} \text{As} \text{Sb}_{1-y} \\
\text{Ga}_x \text{In}_{1-x} \text{As} \text{P}_{1-y} \\
\text{Ga}_x \text{In}_{1-x} \text{As} \text{Sb}_{1-y}
\]

Quaternary alloys of the type III$_{1-x-y}$-III$_x$-III$_y$-V

\[
\text{Al}_x \text{Ga}_y \text{In}_{1-x-y} \text{P} \\
\text{Al}_x \text{Ga}_y \text{In}_{1-x-y} \text{As} \\
\text{Al}_x \text{Ga}_y \text{In}_{1-x-y} \text{Sb}
\]

Quaternary alloys of the type V$_{1-x-y}$-V$_x$-V$_y$

\[
\text{InAs}_{1-x-y} \text{Sb}_y \text{P}_x
\]

Solid solutions between III-V and II-VI compounds

\[
(\text{III-V})_x (\text{II-VI})_{1-x}
\]

Solid solutions between III-V compounds and group IV elements

\[
(\text{III-V})_{1-x} \text{IV}_x \text{or (III-V)}_{1-x} \text{IV}_{2x}
\]
Al(x)Ga(1-x)As
- band structure, energy gaps
- effective masses, deformation potentials and related parameters
- further band structure parameters
- lattice properties
- optical properties
- thermodynamic and structural data, impurities
- transport properties

Al(x)Ga(1-x)As(y)Sb(1-y)
- physical properties

Al(x)Ga(1-x)N
- physical data

Al(x)Ga(1-x)P
- physical data

Al(x)Ga(1-x)Sb
- electronic properties
- further properties

Al(x)In(1-x)As
- physical properties

Al(x)In(1-x)P
- Ordering effects
- physical properties

Al(x)In(1-x)Sb
- physical properties

Aluminum arsenide (AlAs)
- bulk modulus
- dielectric constants
- Grüneisen parameters, phonon width and shift, eigenvectors, mean square displacements
- internal strain, effective charges
- lattice parameters, thermal expansion
- phase transition parameters
phonon dispersion, phonon wavenumbers and frequencies
piezoelectric parameters, second- and third-order susceptibilities
sound velocities, elastic moduli
structure
band structure
band structure parameters, deformation potentials
camel's back structure of the conduction band at X;
carrier mobilities, Seebeck coefficient
crystal structure, lattice parameters, thermal expansion
Debye temperature, hardness, density, melting point
effective masses
elastic moduli, compliances and derived parameters
electrical and thermal conductivity, carrier concentration
energies of symmetry points of the band structure
energy gaps
exciton binding energy
impurities and defects
intra- and interband transition energies, spin-orbit splitting
optical properties, refractive index, dielectric constants
phonon dispersion, phonon wavenumbers
sound velocities
thermodynamical parameters

AlAs(1-x)P(x)

physical properties

Aluminum nitride (AlN)

bulk modulus, Young's and shear modulus
dielectric constants
Grüneisen parameters, phonon line width and shift
internal strain, effective charges, spontaneous polarization
lattice parameters
phase diagram, equation of state, phase transition parameters
phonon dispersion curves, density of state
phonon eigenvectors, mean square displacements
phonon spectra, phonon wavenumbers
piezoelectric constants, electromechanical coupling factor
second- and third-order susceptibilities
sound velocities, elastic moduli
specific heat, thermal conductivity
structure
thermal expansion
third-order elastic constants
band structure
crystal structure, lattice parameters, thermal expansion
Debye temperature, density, hardness, melting point
effective masses, valence band parameters
effective masses, valence band parameters of the zincblende modification
elastic moduli, bulk modulus
electrical and thermal conductivity
energies of symmetry points of the band structure, critical point energies
energy gap
hole mobility, piezoelectric strain coefficients
interband trans. energies, def. potentials, crystal field, spin-orbit splitting
optical properties, dielectric constants, refractive index
phonon dispersion and wavenumbers, Grüneisen parameters, eff. charge
thermodynamical parameters, vaporization

AlN(x)P(1-x)
physical properties

Aluminum phosphide (AlP)
bulk modulus
dielectric constants
elastic moduli
internal strain, effective charges
lattice parameters, thermal expansion
phonon dispersion, phonon frequencies, Grüneisen parameters
piezoelectric parameters, second- and third-order susceptibilities
structure, phase transitions
band gaps
band structure, energies of symmetry points
crystal structure, transition pressures
Debye temperature, density, melting point
effective masses
elastic moduli, bulk modulus
electrical and thermal transport
impurities and defects
lattice parameter
optical properties, dielectric constants
parameters of valence band
phonon dispersion, phonon wavenumbers
thermodynamical parameters, vaporization

Grey tin (alpha-Sn)
bulk and shear modulus
Debye-Waller factor
elastic moduli
high-frequency dielectric constant
internal-strain parameter
lattice parameters
phase transition pressure and volume change
phonon dispersion curves, density of states
phonon frequencies and wavenumbers and related parameters
structure, phase diagram, equation of state
thermal expansion
anisotropy parameters, g-factor of light electrons
band structure
critical point energies
crystal structure, lattice parameter (pure Sn, Sn-IV alloys), thermal expansion
Debye temperature, density, bulk modulus, heat capacity
effective masses
energies of symmetry points of the band structure
impurities and defects
interband transition energies
intraband transition energies
Luttinger parameters, deformation potentials
magnetic properties
optical properties, dielectric constant
phonon frequencies, elastic moduli
transport properties

Aluminum antimonide (AlSb)
bulk modulus
dielectric constants
Grüneisen parameters, phonon line width, phonon eigenvectors, mean square displacements
internal strain, effective charges
lattice parameters, thermal expansion
phonon dispersion, phonon wavenumbers
piezoelectric constants, second- and third-order susceptibilities
sound velocities, elastic moduli
structure, phase transitions
band structure, energies of symmetry points
carrier concentration, Hall scattering factor
conduction band, camel's back structure and effective masses
conduction band, effective masses
core level energies
critical point energies
crystal structure of various phases
Debye temperature, density, hardness, melting point
defformation potentials
elastic moduli, bulk modulus
electrical and thermal conductivity
electron loss, photoelectric threshold
electron mobility
energy gaps
exciton binding energy
further valence band parameter
Grüneisen parameters, effective charge
hole mobility
impurities and defects
lattice parameter, thermal expansion
magnetoresistance
optical properties, dielectric constants
phonon dispersion, phonon wavenumbers and energies
piezo- and elastoresistance
piezoelectric coefficients
piezo-optic and further optical parameters
Seebeck and Nernst coefficient
sound velocities
spin-orbit splitting energies
thermodynamical parameters, vaporization
transitions involving core levels
transport parameters near the melting temperature
valence band, effective masses

B(x)Ga(1-x)As
physical data

B(x)Ga(1-x)N
physical data

B(x)Ga(1-x)P
physical data

Boron arsenide (BAs)
ellastic moduli, bulk modulus
internal strain, effective charge, dielectric constant, third-order susceptibility
lattice parameters, thermal expansion
phonon dispersion, phonon wavenumbers
structure, phase transitions
band structure
crystal structure, density, Debye temperature
thermodynamical data

Boron nitride (BN)
bulk modulus
dielectric constants
effective charges
elastic moduli
Grüneisen parameters, phonon line width, mean square displacements
heat capacity, shock wave velocities
lattice parameters
linear thermal expansion, temperature dependence of lattice parameters
phase diagram, equation of state
phase transition data
phonon dispersion curves and density of states
phonon wavenumbers and frequencies
piezoelectric parameters, third order susceptibility
structure
Young's modulus, internal strain
band structure, hexagonal modification
Debye temperature, heat capacity, density a. rel. parameters, hex. modification
defformation potentials, cubic modification
effective masses, electron affinity, cubic modification
energy gap, effective masses, hexagonal modification
energy gap, width of valence band and related data, cubic modification
general remarks and band structure, cubic modification
interband and core state transition energies, hexagonal modification
lattice parameters, cubic modification
melting point, Debye temperature density, entropy etc., cubic modification
normal pressure and high pressure phases
optical properties, dielectric constant, cubic modification
optical properties, dielectric constants, hexagonal modification
phonon frequencies, elastic constants and related properties, hex. modification
phonon wavenumbers, elastic and related parameters, cubic modification
properties of rhombohedral BN
properties of wurtzite-type BN
structure of valence band, hexagonal modification
structure, lattice parameter, thermal expansion, hexagonal modification
thermodynamic parameters, vaporization, hexagonal modification
transport properties, cubic modification
transport properties, hexagonal modification

Boron phosphide (BP)

bulk modulus
dielectric constants
elastic moduli
Grüneisen parameters, phonon eigenvectors, mean square displacements
internal strain, effectice charges
lattice parameters
linear thermal expansion coefficient
phonon dispersion, wavenumbers and frequencies
piezoelectric constant, third-order susceptibility
structure, equation of state, specific heat, phase transitions
band structure, energy gap  
crystal structure, lattice parameters, thermal expansion  
Debye temperature, melting point, hardness  
deformation potentials  
elastic moduli, bulk a. shear modulus, mode Grüneisen param., eff. charge  
electrical and thermal conductivity  
进一步传输性质  
higher energy optical transitions  
impurities and defects  
optical properties, dielectric constant  
phonon energies and wavenumbers  
thermodynamical properties  

**Boron antimonide (BSb)**  
lattice parameters, phonon dispersion relation, phonon eigenvectors, bulk modulus  
physical properties

**Diamond (C)**  
bulk modulus  
critical-point frequencies  
elastic moduli  
electric field, pressure and strain dependences of phonon frequencies  
fourth-order elastic constants  
fourth-order phonoelastic constants  
Grüneisen parameters  
high-frequency dielectric constant  
internal strain  
isotope dependence of lattice frequencies  
isotope dependence of the phonon density of states and of two-phonon spectra  
lattice parameters  
linear thermal expansion coefficient  
non-linear optical coefficients  
phase diagram, equation of state  
phase transition pressure, volume change  
phonon dispersion relations, phonon density of states  
phonon eigenvectors, mean square displacement, isotope effect of sound velocities  
phonon wave numbers and frequencies  
phonon wavenumbers and frequencies  
pressure, strain and isotope dependence of phonon width  
Raman frequencies, temperature dependence and frequency shift  
structure  
temperature dependence of phonon self energy, frequency dependence of the damping function  
third-order elastic constants  
third-order phonoelastic constants  
two-phonon density of states and second-order Raman and infrared spectra
zone-center Raman phonon linewidth
band structure
Debye temperature, heat capacity, density, hardness, melting point and related data
deformation potentials, electron-hole drop parameters
effective masses
elastic moduli
elastooptic constants, further optical properties
electrical and thermal conduction, transport properties
energies of symmetry points of the band structure
energy gaps
exciton binding energy
general characterization
g-factor, valence band parameters
Grüneisen parameters, Poissons ratio, bulk modulus
lattice parameters, thermal expansion
magnetic properties
normal pressure and high pressure phases
phonon dispersion, phonon frequencies
refractive index, dielectric constants
sound velocity
spin-orbit splitting, interband transition energies

Ga(x)In(1-x)As
Ordering effects
physical properties

Ga(x)In(1-x)As(y)P(1-y)
physical properties

Ga(x)In(1-x)As(y)Sb(1-y)
physical properties

Ga(x)In(1-x)N
physical properties

Ga(x)In(1-x)P
electronic properties
further properties
Ordering effects

Ga(x)In(1-x)Sb
physical properties

Ga(x)In(1-x)As
Gallium arsenide (GaAs)

bulk modulus, Young's and torsional modulus
dielectric constants
Grüneisen parameters, phonon line shift and width
internal strain, effective charges
lattice parameters, thermal expansion
phase transition parameters
phonon dispersion, phonon spectra
phonon lifetime, phonon eigenvectors, mean square displacements
phonon wavenumbers and frequencies
piezoelectric and elastooptic parameters, second- and third-order susceptibilities
second- and third-order elastic moduli and compliances
sound velocities, ultrasonic attenuation, phonon viscosity
structure, phase diagram, equation of state
absorption spectrum in the vacuum uv
Auger effect
band structure
bulk, Young's and torsion moduli, internal strain
camel's back structure of X6 conduction band minimum
conduction band effective masses and related parameters
core level binding energies, photoionization cross-sections
core level energies
crystal structure, phases
data from electron loss, yield and X-ray emission spectroscopy
data from photoelectron spectroscopy (ESCA)
data from Raman spectra
Debye temperature, density, heat capacity, melting point
deformation potentials
dielectric constants
direct energy gap
elastic moduli
elastoresistance coefficients
electron drift velocity and diffusion coefficient
electron mobility
electron-two-phonon deformation potentials
electrooptic constants, second and third order nonlinear susceptibilities
energies of symmetry points of the band structure
exciton ground and excited states
further optical spectra
Grüneisen parameters, effective charge
Hall scattering factor
hole mobility and drift velocity
indirect energy gap
interband transition energies (critical point energies)
 intra- and interband transition energies
intrinsic carrier concentration, electrical and thermal conductivity
lattice parameter, thermal expansion
magnetic properties
magnetoresistance
minority carrier transp., impact ioniz., carrier lifetimes, plasmon energy

Nernst coefficient

non-parabolicity and warping parameters
optical constants
other parameters related to conduction band minima, g-factors
phonon dispersion, phonon frequencies and wavenumbers

photoemission data
piezoelectric constants
piezooptic constants, piezobirefringence
piezoresistance tensor coefficients
reflectance, two-photon absorption
refractive index, absorption index, absorption coefficients

Schottky barriers
Seebeck coefficient
sound velocities

spin-orbit splitting energies
thermodynamical parameters, vaporization
third order elastic moduli
transport mechanisms

typical data for semi-insulating GaAs
valence band parameters
valence bands, effective masses

GaAs(1-x)Sb(x)

physical properties

GaAs(1-x)Sb(x)

physical properties

Gallium nitride (GaN)

bulk modulus
dielectric constants
elastic moduli
Grüneisen parameters
internal strain, effective charges, spontaneous polarization
lattice parameters, thermal expansion
mean square displacements, sound velocities
phase diagram, equation of states, phase transitions
phonon dispersion, density of states, Raman and infrared spectra
phonon wavenumbers and frequencies
phonon width and shift, phonon eigenvectors
piezoelectric constants
second and third order susceptibilities
structure
band structure
crystal structure, lattice param., thermal expansion, high pressure phases
Debye temperature, melting point, density
effective masses, g-factors, deformation potentials
electrical and thermal conductivity, electron concentration
energy gap, exciton binding energy
interband transition and splitting energies
magnetic properties
mobilities, Seebeck effect
optical properties, dielectric constant
phonon data, elastic moduli, Grüneisen and rel. parameters
thermodynamical parameters, vaporization

GaN(x)As(1-x)
physical properties

GaN(x)P(1-x)
physical properties

Gallium phosphide (GaP)
bulk modulus, Young's and torsional modulus
dielectric constants
Grüneisen parameters, phonon eigenvectors, mean square displacements
internal strain, effective charges
lattice parameters, thermal expansion
phase transition parameters
phonon dispersion, density of states
phonon frequencies and wavenumbers
phonon self energy, phonon line shift and width
piezoelectric and electrooptic parameters, second- and third-order susceptibility
sound velocities, second- and third-order elastic moduli
structure, equation of state, specific heat
band structure
bulk modulus, mode Grüneisen parameters and related data
camel's back structure of conduction band, effective masses
conduction and valence band, effective masses
critical points of phonon dispersion curves
crystal structure of various phases
data from angle integrated photoemission
Debye temperature, density, hardness, heat capacity
defformation potentials
direct energy gap
elastic moduli
electron concentration and mobility
energies of symmetry points of the band structure
energy gaps, temperature and pressure dependence
exciton ground state
further optical properties
hole concentration and mobility
indirect band gaps
interband transition and splitting energies
lattice parameter, thermal expansion, Grüneisen parameters
magnetic properties
magnetoresistance, Seebeck coefficient
minority carrier and positron lifetimes, plasmon energy
optical constants
optical properties involving core level transitions
phonon dispersion, phonon frequencies
piezoelectric coefficients
pressure dependence of elastic moduli
refractive index, absorption, reflection, dielectric constants
second order nonlin. dielectric susceptibilities, birefringence, etc.
sound velocities
thermodynamical data, vaporization
third order elastic moduli
transport mechanisms, electrical and thermal conductivity
transverse effective charge
valence band parameters
Young's modulus and torsional modulus

GaP(x)As(1-x)
physical properties

GaP(x)Sb(1-x)
physical properties

Gallium antimonide (GaSb)
bulk modulus, Young's and shear modulus
dielectric constants
elastic moduli
Grüneisen parameters, phonon line width and eigenvectors, mean square displacements
internal strain, effective charges
lattice parameters, thermal expansion
phase diagram, equation of state, phase transitions
phonon dispersion, wavenumbers and frequencies
piezoelectric parameters, second- and third-order susceptibilities
sound velocity, ultrasonic attenuation
structure
absorption spectrum in the vacuum uv
Auger coefficient
band structure, energies of symmetry points
bulk modulus
conduction band splitting by strain
conduction band, effective masses
critical point effective mass, spin-orbit splitting valence band
critical point energies
crystal structure, high-pressure phases
data for the L and X conduction band minima
data from angle integrated photoemission
Debye temperature, density, hardness, melting point
deformation potentials
dielectric constants
direct energy gap
effective charge
elastic moduli
elastoresistance coefficients
electron loss and yield spectroscopy
electron mobility
exciton ground state
Hall scattering factor
heavy and light hole mobilities
higher band-band transitions (critical point energies)
higher conduction band minima, energy difference to lowest minimum
hole mobility
intrinsic carrier concentration, resistivity
lattice parameter, thermal expansion
magnetic properties
magnetoresistance
mode Grüneisen parameters
Nernst coefficient
optical properties, optical constants
phonon dispersion, phonon frequencies
photoel. threshold, core levels, photoionization cross section
piezooptic constants, dependence of phonons on uniaxial stress
piezoresistance tensor coefficients
refractive index, absorption index and coefficient
Schottky barriers
second order nonlinear dielectric susceptibilities
Seebeck coefficient
spin-orbit splitting energies
structure of conduction band minimum and valence band maximum
thermal conductivity
thermodynamical parameters
third order elastic moduli
transport mechanisms
valence band parameters
valence band, effective masses
Germanium (Ge)

bulk modulus
elastic moduli
high-frequency dielectric constant
internal strain
lattice parameters
mean square displacements
mode Grüneisen parameters
phase diagram, equation of state
phase transition pressure and volume change
phonon dispersion relations, density of states
phonon shift and width
phonon wavenumbers and frequencies
photoelasticity
Raman phonon frequencies and wavenumbers
sound velocities, ultrasound attenuation
structure
thermal expansion
third-order elastic moduli
third-order susceptibility
band structure
conduction band, effective masses
critical point energies
crystal structure of the various modifications
data from Raman measurements
Debye temperature, density, hardness, melting point, heat capacity
deformation potentials
dielectric constant
direct and optical energy gap
effective number of free electrons
elastic moduli
elastoresistance coefficients
electron mobility
electrostriction coefficients
energies of symmetry points of the band structure
energy of phonon modes in amorphous samples
exciton data
g-factor of electrons
g-factor, spin-orbit split-off band
Hall scattering factor
heats of fusion and sublimation, enthalpy and entropy, vapor pressure
higher band-band transitions (critical point energies)
hole mobility
indirect energy gap
intrinsic carrier concentration
lattice parameter, thermal expansion
magnetic properties
magnetoresistance
optical constants
optical properties involving core level transitions
optical spectra
phonon dispersion, phonon frequencies
phonons participating in indirect transitions
piezooptic and elastooptic constants, birefringence
piezoresistance coefficients
plasma energy of valence electrons
positron lifetime in Ge
reduced interband masses at critical point transitions
refractive index
Schottky barrier heights
Seebeck and Nernst coefficients
sound velocities
spin-orbit splitting energies
stopping power for electron energy loss
strain and field dependence of hole mobility
thermal conductivity
third order elastic moduli
third order susceptibilities
transport mechanisms, conductivity
transport properties in liquid Ge
valence band parameters
valence band, effective masses
warm electrons, electron drift velocity
Young's, torsion and bulk moduli, Grüneisen parameters

In(1-x)Sb(x)As
Ordering effects

In(1-x-y)Al(x)Ga(y)As
physical properties

In(1-x-y)Al(x)Ga(y)P
physical properties

In(1-x-y)Al(x)Ga(y)Sb
physical properties

Indium arsenide (InAs)
bulk modulus
dielectric constants
elastic moduli and compliances
internal strain, effective charges
lattice parameters, thermal expansion
phonon dispersion, phonon spectra, phonon wavenumbers
phonon line width and eigenvectors, Grüneisen parameters, mean square displacements
piezoelectric parameters, nonlinear susceptibilities
sound velocities and attenuation
structure, phase transition parameters
absorption spectra in the vacuum uv
band structure, energies of symmetry points
carrier concentrations
carrier mobilities, Hall scattering factor
conduction band, effective masses
crystal structure, high pressure phases
data from angle integrated photoemission
data from Raman spectroscopy
Debye temperature, density, hardness, melting point
deformation potentials
dependence of phonons on uniaxial stress
dielectric constants
elastic moduli
electrical and thermal transport
electron g-factor, camel's back structure at conduction band edge
electron loss, yield and X-ray emission spectroscopy
energy gap, exciton data
higher band-band transitions
lattice parameter, thermal expansion
magnetic properties
magnetoresistance
mode Grüneisen parameters, effective charge
Nernst and Righi-Leduc coefficients
optical constants
phonon dispersion, phonon wavenumbers
photoelectric threshold, binding energies of core levels
piezooptic constants, piezobirefringence
piezoresistance and piezoelectric constants
recombination and generation, lifetimes
refractive and absorption index, reflectance
second order nonlinear dielectric susceptibility
Seebeck coefficient
sound velocities
spin-orbit splitting energies
thermodynamical parameters, vaporization
valence band parameters
valence band, effective masses
InAs(1-x-y)Sb(y)P(x)
physical properties
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InAs(x)Sb(1-x)
physical properties
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InBi(x)As(1-x)
physical properties
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InBi(x)Sb(1-x)
physical properties
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Indium nitride (InN)
bulk modulus
dielectric constants
elastic moduli
Grüneisen parameters, phonon line width
internal strain, effective charges, spontaneous polarization
lattice parameters, thermal expansion
phonon dispersion, phonon wavenumbers and frequencies
piezoelectric parameters, third-order susceptibility
structure, phase transitions
density, melting point, thermodynamical parameters, vaporization
electronic properties
lattice properties
magnetic properties
optical properties, dielectric constants
transport properties
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Indium phosphide (InP)
bulk modulus
dielectric constants
Grüneisen constants, phonon eigenvector, mean square displacements
lattice parameters, thermal expansion
phonon dispersion and density of states, phonon-plasmon modes
phonon frequencies and wavenumbers
piezoelectric parameters, second- and third-order susceptibilities
shear moduli, internal strain, effective charges
sound velocities, elastic moduli
structure, phase transition parameters
absorption spectrum in the vacuum uv
band structure, energies of symmetry points
bulk and shear moduli
conduction band, effective mass
crystal structure, high pressure phases
data from angle integrated photoemission and Auger spectra
data from Raman spectroscopy
Debye temperature, density, hardness
deformation potentials
dielectric constants
elastic moduli
electrical and thermal conductivity, carrier concentrations
electron drift velocity, impact ionization rates
electron g-factor
electron mobility
electron-two-phonon deformation potential
energy gap
exciton states and parameters
Grüneisen constant and parameters
Hall scattering factor, magnetoresistance
hole and positron lifetimes, plasmon dispersion
hole mobility
interband transition and splitting energies
intraband transition energies
lattice parameter, thermal expansion
magnetic properties
optical constants
phonon dispersion and frequencies
piezooptic constants, piezobirefringence
piezoresistance tensor coefficient
pressure dependence of dynamical parameters
refractive and absorption index, reflectance
Schottky barrier heights
second order nonlinear dielectric susceptibilities
Seebeck and Nernst coefficients
sound velocities
temperature, pressure and concentration dependence of energy gaps
thermodynamical parameters, vaporization
third order elastic moduli
transport mechanism
transverse effective charge
valence band parameters
valence band, effective masses
X-ray emission, photoelectric threshold, binding energies of core levels

InP(x)As(1-x)
physical properties

InP(x)Sb(1-x)
physical properties
Indium antimonide (InSb)
piezoelectric constants
piezooptic constants, piezobirefringence
recombination and positron lifetimes, plasmon energy
refractive and absorption index, reflectance
Seebeck coefficient
sets of Kane band parameters (valence band parameters)
sound velocities
spin-orbit splitting energies
thermodynamical data, vaporization
third order elastic moduli
transition pressure to $\beta$-Sn structure
two-photon absorption, third order susceptibility
valence band, effective masses

Silicon (Si)

anharmonicity parameter of the LTO mode
critical point wavenumbers and phonon frequencies
elastic moduli of other Si modifications
elastic moduli of Si-I
elasto-optic (photoelastic) coefficients
fourth-order elastic constants of Si-I
high-frequency dielectric constant
internal strain
lattice parameters
mean square displacements
mode Grüneisen parameters
phase diagram, equation of state
phase transition pressure and volume change
phonon dispersion relations
phonon line widths and related parameters
phonon wavenumbers and frequencies
pressure dependence of elastic moduli of Si-I
pressure dependence of phonon wavenumbers and frequencies
Raman frequencies, dependence on various parameters
sound attenuation, phonon viscosity tensor
sound velocities
structure
thermal expansion
third-order elastic constants of Si-I
third-order susceptibility
Young's modulus, torsion modulus, bulk modulus
absorption index, absorption coefficient
band structure
carrier lifetimes, Auger coefficient, plasmons
conduction band, effective masses
data from Raman spectra
Debye temperature, heat capacity, density, hardness, melting point
deforation potentials
direct gap
electrical conductivity
electron drift velocity, warm electrons, intervalley relaxation time
electron mobility
energies of symmetry points of the band structure
exciton ground and related states, biexitons
g-factor of electrons
Grüneisen parameters and related data
Hall scattering factor
higher band-band transitions (critical point energies)
hole drift velocity and diffusion
hole mobility
i.r. and two-photon absorption, further optical parameters
indirect energy gap
internal strain, Young's, torsion and bulk moduli
intrinsic carrier concentration
lattice parameter, thermal expansion
magnetic properties
magnetoresistance
normal and high pressure phases, liquid phase
optical constants
optical properties involving core level transitions
phonon dispersion
phonon frequencies
piezooptic constants
plasma energy, energy loss
reflectance, dielectric constants
refractive index
Schottky barrier heights
second order elastic moduli
Seebeck and Nernst coefficients
sound velocities
spin-orbit splitting energies, second indirect gap
thermal conductivity
thermodynamical parameters
third order elastic moduli
third order susceptibilities
transport mechanism
valence band parameters
valence band, effective masses

Si(x)Ge(1-x)

electronic, lattice, transport and optical properties
thermodynamic properties
Silicon carbide (SiC)

- bulk modulus, Young's modulus, shear modulus
- effective charges
- elastic moduli
- high-frequency dielectric constant
- internal strain
- lattice parameters
- low-frequency dielectric constant
- mean square displacements
- mode Grüneisen parameters
- non-linear low frequency susceptibility, third-order susceptibility
- phase transition pressure and volume change
- phonon dispersion relations, density of states
- phonon spectra, coupled phonon-plasmon modes
- phonon wavenumbers and frequencies
- piezoelectric and related constants
- Raman phonon wavenumbers
- sound velocity
- structure, equation of state
- thermal conductivity
- thermal expansion
- band structure, energy gaps
- carrier concentration, resistivity, mobilities
- crystal structure, unit cells, chemical bond, high pressure phases
- Debye temperature, density, hardness, melting point, thermodyn. functions
- dielectric constants, nonlinear optics
- effective masses
- electron drift velocity, breakdown field
- exciton binding energy, spin-orbit splitting and interband transition energies
- lattice parameters, thermal expansion
- magnetic properties
- mode Grüneisen parameters, sound velocity, elastic moduli, etc.
- phonon dispersion, phonon frequencies and wavenumbers
- polytypes
- refractive index, absorption coefficient, optical spectra
- thermal conductivity
- valence band parameters, deformation potentials
- work function

Solid solutions between III-V compounds and group IV elements: (III-V)(1–x)IV(x,2x)

Solid solutions between III-V and II-VI compounds: (III-V)(x)(II-VI)(1–x)

Comparative table
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