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Nota di contenuto	<p>""Contents""; ""1 Introduction""; ""1.1 Classification of optical processes""; ""1.2 Optical coefficients""; ""1.3 The complex refractive index and dielectric constant""; ""1.4 Optical materials""; ""1.4.1 Crystalline insulators and semiconductors""; ""1.4.2 Glasses""; ""1.4.3 Metals""; ""1.4.4 Molecular materials""; ""1.4.5 Doped glasses and insulators""; ""1.5 Characteristic optical physics in the solid state""; ""1.5.1 Crystal symmetry""; ""1.5.2 Electronic bands""; ""1.5.3 Vibronic bands""; ""1.5.4 The density of states""; ""1.5.5 Delocalized states and collective excitations""</p> <p>""1.6 Microscopic models""""Chapter summary""; ""Further reading""; ""Exercises""; ""2 Classical propagation""; ""2.1 Propagation of light in a dense optical medium""; ""2.1.1 Atomic oscillators""; ""2.1.2 Vibrational oscillators""; ""2.1.3 Free electron oscillators""; ""2.2 The dipole oscillator model""; ""2.2.1 The Lorentz oscillator""; ""2.2.2 Multiple resonances""; ""2.2.3 Comparison with experimental data""; ""2.2.4 Local field corrections""; ""2.3 The Kramersa€?Kronig relationships""; ""2.4 Dispersion""; ""2.5 Optical anisotropy""; ""2.5.1 Natural anisotropy: birefringence""</p> <p>""2.5.2 Induced optical anisotropy""""2.6 Optical chirality""; ""Chapter summary""; ""Further reading""; ""Exercises""; ""3 Interband absorption""; ""3.1 Interband transitions""; ""3.2 The transition rate for direct absorption""; ""3.3 Band edge absorption in direct gap semiconductors""; ""3.3.1 The atomic physics of the interband</p>

transitions"; ""3.3.2 The band structure of a direct gap IIIa€?V semiconductor"; ""3.3.3 The joint density of states"; ""3.3.4 The frequency dependence of the band edge absorption"; ""3.3.5 The Franza€?Keldysh effect""
""3.3.6 Band edge absorption in a magnetic field""""3.3.7 Spin injection"; ""3.4 Band edge absorption in indirect gap semiconductors"; ""3.5 Interband absorption above the band edge"; ""3.6 Measurement of absorption spectra"; ""3.7 Semiconductor photodetectors"; ""3.7.1 Photodiodes"; ""3.7.2 Photoconductive devices"; ""3.7.3 Photovoltaic devices"; ""Chapter summary"; ""Further reading"; ""Exercises"; ""4 Excitons"; ""4.1 The concept of excitons"; ""4.2 Free excitons"; ""4.2.1 Binding energy and radius"; ""4.2.2 Exciton absorption""
""4.2.3 Experimental data for free excitons in GaAs""""4.3 Free excitons in external fields"; ""4.3.1 Electric fields"; ""4.3.2 Magnetic fields"; ""4.4 Free excitons at high densities"; ""4.5 Frenkel excitons"; ""4.5.1 Rare gas crystals"; ""4.5.2 Alkali halides"; ""4.5.3 Molecular crystals"; ""Chapter summary"; ""Further reading"; ""Exercises"; ""5 Luminescence"; ""5.1 Light emission in solids"; ""5.2 Interband luminescence"; ""5.2.1 Direct gap materials"; ""5.2.2 Indirect gap materials"; ""5.3 Photoluminescence"; ""5.3.1 Excitation and relaxation""
""5.3.2 Low carrier densities""
