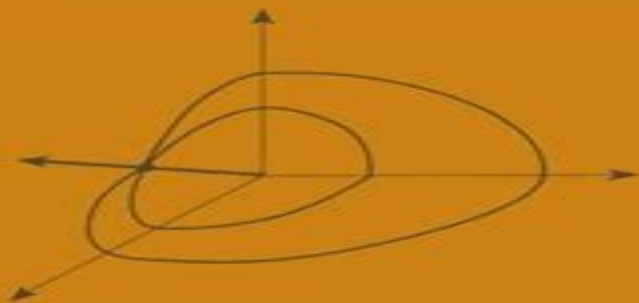


# Optical Sciences

V. G. Dmitriev G. G. Gurzadyan  
D. N. Nikogosyan

## Handbook of Nonlinear Optical Crystals

Second, Revised and Updated Edition



Springer

# Handbook Of Nonlinear Optical Crystals

**Michal Rosen-Zvi**



## **Handbook Of Nonlinear Optical Crystals:**

**Handbook of Nonlinear Optical Crystals** Valentin Georgievich Dmitriev, G. G. Gurzadyan, D. N. Nikogosyan, 1991  
Gurzadyan's name appears first on the Russian original **Handbook of Nonlinear Optical Crystals** Valentin G. Dmitriev, Gagik G. Gurzadyan, David N. Nikogosyan, 2013-04-17 Four years ago when we had finished our work on the first edition of our Handbook we didn't even suppose that three years later it would become necessary to greatly revise and update the material. It happened because of the following developments: 1 The invention and tremendous development of modern nonlinear optical crystals such as BBO, LBO, KTP, ZnGeP<sub>2</sub> etc. 2 Rapid progress in laser techniques: femtosecond CPM laser, Ti:sapphire laser, diode pumped solid state lasers etc. 3 The appearance of numerous organic crystals which can be synthesized with predictable properties. 4 Progress in the theory of nonlinear frequency conversion utilizing biaxial crystals, femtosecond pulses etc. 5 Accumulation of new data on the properties of nonlinear optical crystals. In accordance with the above we have made many changes in the text. The first chapter was revised by D. N. Nikogosyan, the second one by V. G. Dmitriev and D. N. Nikogosyan, and the fourth one by G. G. Gurzadyan. The third chapter containing the main reference material on 77 nonlinear optical crystals was completely rewritten and updated by D. N. Nikogosyan. The Appendix containing the list of most commonly used laser wavelengths was compiled by D. N. Nikogosyan. We would appreciate any valuable comments and recommendations that will allow us to further improve the Handbook. We would like to thank H. K. V. Lotsch for fruitful and long lasting cooperation.

*Handbook of Nonlinear Optical Crystals* Valentin G. Dmitriev, Gagik G. Gurzadyan, David N. Nikogosyan, 2013-11-11 Since the invention of the first laser 30 years ago the frequency conversion of laser radiation in nonlinear optical crystals has become an important technique widely used in quantum electronics and laser physics for solving various scientific and engineering problems. The fundamental physics of three wave light interactions in nonlinear optical crystals is now well understood. This has enabled the production of various harmonic generators, sum and difference frequency generators and optical parametric oscillators based on nonlinear optical crystals that are now commercially available. At the same time scientists continue an active search for novel highly efficient nonlinear optical materials. Therefore in our opinion there is a great need for a handbook of nonlinear optical crystals intended for specialists and practitioners with an engineering background. This book contains a complete description of the properties and applications of all nonlinear optical crystals of practical importance reported in the literature up to the beginning of 1990. In addition it contains the most important equations for calculating the main parameters such as phase matching, direction, effective nonlinearity and conversion efficiency of nonlinear frequency converters.

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nonlinear frequency converters This comprehensive reference work will be of great value to all scientists and engineers working in nonlinear optics quantum electronics and laser physics Handbook of Nonlinear Optical Crystals Valentin G. Dmitriev, Gagik G. Gurzadyan, David N. Nikogosyan, 2013-11-11 Since the invention of the first laser 30 years ago the frequency conversion of laser radiation in nonlinear optical crystals has become an important technique widely used in quantum electronics and laser physics for solving various scientific and engineering problems The fundamental physics of three wave light interactions in nonlinear optical crystals is now largely understood This has enabled the production of the various harmonic generators sum and difference frequency generators and parametric oscillators based on nonlinear crystals that are now commercially available At the same time scientists continue an active search for novel high efficiency optical materials Therefore in our opinion there is a great need for a handbook of nonlinear optical crystals intended for specialists and practitioners with an engineering background This book contains a complete description of the properties and applications of all nonlinear crystals reported in the literature up to the beginning of 1990 In addition it contains the most important equations for calculating the main parameters such as phase matching direction effective non linearity and conversion efficiency of nonlinear frequency converters Nonlinear Optical Crystals: A Complete Survey David N. Nikogosyan, 2006-03-21 Nonlinear optical techniques are now recognized as the most efficient means available to generate laser radiation at wavelengths that are presently inaccessible via conventional sources This technology uses nonlinear optical crystals for the frequency conversion of laser light The book contains the most complete and up to date reference material on properties of nonlinear optical crystals describes their applications both traditional and specific and provides the main mathematical formulas necessary for the calculation of the frequency conversion process It is a vital source of information for scientists and engineers dealing with modern applications of nonlinear optical crystals in quantum electronics optoelectronics and laser physics **Springer Handbook of Condensed Matter and Materials Data** Werner Martienssen, Hans Warlimont, 2006-09-21 Springer Handbook of Condensed Matter and Materials Data provides a concise compilation of data and functional relationships from the fields of solid state physics and materials in this 1200 page volume The data encapsulated in 914 tables and 1025 illustrations have been selected and extracted primarily from the extensive high quality data collection Landolt B rnstein and also from other systematic data sources and recent publications of physical and technical property data Many chapters are authored by Landolt B rnstein editors including the prominent Springer Handbook editors W Martienssen and H Warlimont themselves The Handbook is designed to be useful as a desktop reference for fast and easy retrieval of essential and reliable data in the lab or office References to more extensive data sources are also provided in the book and by interlinking to the relevant sources on the enclosed CD ROM Physicists chemists and engineers engaged in fields of solid state sciences and materials technologies in research development and application will appreciate the ready access to the key information coherently organized within this wide ranging Handbook From the

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