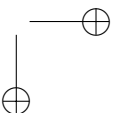
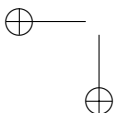
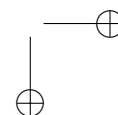
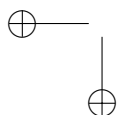

Contents

Preface	v
Abbreviations	xi
1 Introduction	1
2 Basic Nonlinear Optical Crystals	5
2.1 β -BaB ₂ O ₄ , Beta-Barium Borate (BBO)	5
2.2 LiB ₃ O ₅ , Lithium Triborate (LBO)	19
2.3 LiNbO ₃ , Lithium Niobate (LN)	35
2.4 KTiOPO ₄ , Potassium Titanyl Phosphate (KTP)	54
3 Main Infrared Materials	75
3.1 AgGaS ₂ , Silver Thiogallate (AGS)	75
3.2 AgGaSe ₂ , Silver Gallium Selenide (AGSe)	86
3.3 ZnGeP ₂ , Zinc Germanium Phosphide (ZGP)	96
3.4 GaSe, Gallium Selenide	108
4 Often-Used Crystals	115
4.1 KH ₂ PO ₄ , Potassium Dihydrogen Phosphate (KDP)	115
4.2 NH ₄ H ₂ PO ₄ , Ammonium Dihydrogen Phosphate (ADP)	133
4.3 KD ₂ PO ₄ , Deuterated Potassium Dihydrogen Phosphate (DKDP) ...	145
4.4 CsLiB ₆ O ₁₀ , Cesium Lithium Borate (CLBO)	154
4.5 MgO:LiNbO ₃ , Magnesium-Oxide-Doped Lithium Niobate (MgLN)	161
4.6 KTiOAsO ₄ , Potassium Titanyl Arsenate (KTA)	168
4.7 KNbO ₃ , Potassium Niobate (KN)	173
5 Periodically Poled Crystals and “Wafer” Materials	185
5.1 LiTaO ₃ , Lithium Tantalate (LT)	185
5.2 RbTiOAsO ₄ , Rubidium Titanyl Arsenate (RTA)	190
5.3 BaTiO ₃ , Barium Titanate	196



5.4	MgBaF ₄ , Magnesium Barium Fluoride	201
5.5	GaAs, Gallium Arsenide	204
6	Newly Developed and Perspective Crystals	215
6.1	BiB ₃ O ₆ , Bismuth Triborate (BIBO)	215
6.2	K ₂ Al ₂ B ₂ O ₇ , Potassium Aluminum Borate (KABO)	218
6.3	KBe ₂ BO ₃ F ₂ , Potassium Fluoroboratoberyllate (KBBF)	222
6.4	BaAlBO ₃ F ₂ , Barium Aluminum Fluoroborate (BABF)	224
6.5	La ₂ CaB ₁₀ O ₁₉ , Lanthanum Calcium Borate (LCB)	226
6.6	GdCa ₄ O(BO ₃) ₃ , Gadolinium Calcium Oxyborate (GdCOB)	227
6.7	YCa ₄ O(BO ₃) ₃ , Yttrium Calcium Oxyborate (YCOB)	233
6.8	Gd _x Y _{1-x} Ca ₄ O(BO ₃) ₃ , Gadolinium–Yttrium Calcium Oxyborate (GdYCOB)	242
6.9	Li ₂ B ₄ O ₇ , Lithium Tetraborate (LB4)	246
6.10	LiRbB ₄ O ₇ , Lithium Rubidium Tetraborate (LRB4)	249
6.11	CdHg(SCN) ₄ , Cadmium Mercury Thiocyanate (CMTC)	251
6.12	Nb:KTiOPO ₄ , Niobium-Doped KTP (Nb _x K _{1-x} Ti _{1-x} OPO ₄ or NbKTP)	254
6.13	RbTiOPO ₄ , Rubidium Titanyl Phosphate (RTP)	258
6.14	LiInS ₂ , Lithium Thioindate (LIS)	261
6.15	LiInSe ₂ , Lithium Indium Selenide (LISe)	267
6.16	LiGaS ₂ , Lithium Thiogallate (LGS)	269
6.17	LiGaSe ₂ , Lithium Gallium Selenide (LGSe)	270
6.18	AgGa _x In _{1-x} Se ₂ , Silver Gallium–Indium Selenide (AGISE)	272
6.19	Tl ₄ HgI ₆ , Thallium Mercury Iodide (THI)	274
7	Self-Frequency-Doubling Crystals	277
7.1	Nd:MgO:LiNbO ₃ , Neodymium– and Magnesium-Oxide–Doped Lithium Niobate (NdMgLN)	277
7.2	Nd:YAl ₃ (BO ₃) ₄ , Neodymium-Doped Yttrium Aluminum Tetraborate (NYAB)	281
7.3	Nd:GdAl ₃ O(BO ₃) ₄ , Neodymium-Doped Gadolinium Aluminum Tetraborate (NGAB)	288
7.4	Nd:GdCa ₄ O(BO ₃) ₃ , Neodymium-Doped Gadolinium Calcium Oxyborate (NdGdCOB)	291
7.5	Nd:YCa ₄ O(BO ₃) ₃ , Neodymium-Doped Yttrium Calcium Oxyborate (NdYCOB)	296
7.6	Nd:LaBGeO ₅ , Neodymium-Doped Lanthanum Borogermanate (NdLBGO)	300
7.7	Nd:Gd ₂ (MoO ₄) ₃ , Neodymium-Doped Gadolinium Molybdate (NdGdMO)	303
7.8	Yb:YAl ₃ (BO ₃) ₄ , Ytterbium-Doped Yttrium Aluminum Tetraborate (YbYAB)	307



7.9	Yb:GdCa ₄ O(BO ₃) ₃ , Ytterbium-Doped Gadolinium Calcium Oxyborate (YbGdCOB)	311
7.10	Yb:YCa ₄ O(BO ₃) ₃ , Ytterbium-Doped Yttrium Calcium Oxyborate (YbYCOB)	314
8	Rarely Used and Archive Crystals	319
8.1	KB ₅ O ₈ · 4H ₂ O, Potassium Pentaborate Tetrahydrate (KB5)	319
8.2	CsB ₃ O ₅ , Cesium Triborate (CBO)	325
8.3	C ₄ H ₇ D ₁₂ N ₄ PO ₇ , Deuterated <i>L</i> -Arginine Phosphate Monohydrate (DLAP)	327
8.4	α -Iodic Acid (α -HIO ₃)	331
8.5	LiCOOH·H ₂ O, Lithium Formate Monohydrate (LFM)	335
8.6	CsH ₂ AsO ₄ , Cesium Dihydrogen Arsenate (CDA)	338
8.7	CsD ₂ AsO ₄ , Deuterated Cesium Dihydrogen Arsenate (DCDA)	342
8.8	RbH ₂ PO ₄ , Rubidium Dihydrogen Phosphate (RDP)	346
8.9	CsTiOAsO ₄ , Cesium Titanyl Arsenate (CTA)	351
8.10	Ba ₂ NaNb ₅ O ₁₅ , Barium Sodium Niobate (BNN)	354
8.11	K ₃ Li ₂ Nb ₅ O ₁₅ , Potassium Lithium Niobate (KLN)	358
8.12	CO(NH ₂) ₂ , Urea	361
8.13	LiIO ₃ , Lithium Iodate	364
8.14	Ag ₃ AsS ₃ , Proustite	374
8.15	HgGa ₂ S ₄ , Mercury Thiogallate	380
8.16	CdGeAs ₂ , Cadmium Germanium Arsenide (CGA)	383
8.17	Tl ₃ AsSe ₃ , Thallium Arsenic Selenide (TAS)	388
8.18	CdSe, Cadmium Selenide	391
9	Some Recent Applications	399
9.1	Deep-UV Light Generation	399
9.2	Terahertz-Wave Generation by DFG	400
9.3	Ultrashort Laser Pulse Compression via SHG	402
9.4	Self-Frequency-Doubling Crystals	403
9.5	Periodically Poled Crystals	406
9.6	Photonic Band-Gap Crystals	410
9.7	THG via $\chi^{(3)}$ Nonlinearity	411
10	Concluding Remarks	413
	Appendix A: Full Titles of Listed Journals	415
	Appendix B: Recent References added at Proof Reading	421
	Subject Index	425

