

## Appendix

# Flux-Grown Crystals Published in *Journal of Crystal Growth* since 1975

A comprehensive list of flux-grown crystals up to 1975 is given in *Crystal Growth from High-Temperature Solutions* by D. Elwell and H.J. Scheel (Academic Press, London, 1975). To provide some more recent examples, this Appendix lists the flux-grown crystals that have been reported in *Journal of Crystal Growth* from 1975 to 2016 inclusive. Although efforts were made to include as many relevant papers as possible, some important studies may have been overlooked. Evaporation growths are included, but seeded growths are not, and only one example for each compound is shown in most cases (the presence of other studies is remarked upon). High-pressure growths and growths that result in crystals much smaller than 1 mm are not included. The list provides the highest temperature used in the experiment (such as the starting temperature of slow cooling), the maximum crystal dimension in millimeters, the published volume, and the first page number. The published year is not shown, but the following examples should give approximate times of publication: Vol. 30 (1975); 50 (1980); 75 (1986); 100 (1990); 150 (1995); 200 (1999); 250 (2003); 300 (2007); 350 (2012); 400 (2014). In few instances the paper is published in multi-volume proceedings; in such a case the correct volume is given in the remarks column. Because of their sheer variety, high-temperature copper oxide superconductors are not included in the list.

Flux-grown crystals published in *Journal of Crystal Growth* from 1975 to 2016

Crystal	Flux <sup>a</sup>	$T_{\max}$ (°C)	mm	Remarks	Vol.	Page
$A_{0.3}MoO_3$	$A_2O-MoO_3$	605	8	A = K, Rb, Cs	70	476
$A_{0.9}Mo_6O_{17}$	$A_2O-MoO_3$	572	5	A = Na, K	70	476
$A_2Nb_4O_{11}$	$A_2O$	1200	15	A = Cs, Rb; Vol. 237–239	237	703
$A_2SiO_4$	PbO–PbF <sub>2</sub>	1270	10	A = Co, Zr, Th, Zr, Zn, Mg; also Sj=Ge	37	51
$A_2SnO_4$	$Bi_2O_3-V_2O_5$	1300	3	A = Mg, An, Co	59	662
$ABO_3$	PbO–PbF <sub>2</sub>	1000	8	A = Fe, Ga, In, Sc, Lu	455	55
$Ag(Ta, Nb)O_3$	$Ag_2O-V_2O_5$	1152	5	Also previous study	96	703
$Al_2O_3:Cr$	$Bi_2O_3-PbF_2-La_2O_3$	1270		Also other fluxes	280	551
$Al_71Pd_{51}Mn_{18}$	Al	875		Quasicrystal	225	155
$Al_{80}Ni_{11}Co_{17}$	Al	1200		Quasicrystal	225	155
Al–Mg–B	Al	1500	4	Also other borides	99	998
AlN	Fe	1700	1		34	263
$ANb_2O_6$	$Na_2B_4O_7$	1240	8	A = Mg, Zn, Ba	58	463
$APd_3O_4$	KOH	750	2	A = Ca, Sr	216	299
$AR_5(Si_4O_6)O_2$	(Na, Li)MoO <sub>4</sub>	1380	4	A = Li, Na; R = Eu, Nd	99	879
$ASb_2O_6$	$V_2O_5-B_2O_3$	1000	2.5	A = Mn, Co, Ni, Cu	154	334
(Ba, Ca)TiO <sub>3</sub>	KF	1160	10		94	125
(Ba, K)Fe <sub>2</sub> As <sub>2</sub>	Sn			Solubility study	316	85
(Ba, Sr) <sub>2</sub> Zn <sub>2</sub> Fe <sub>12</sub> O <sub>22</sub>	$Na_2O-Fe_2O_3$	1420	27		83	403
(Ba, Sr)TiO <sub>3</sub> :Co	KF	1220	5	Vol.: 237–239	237	858
$Ba_2Fe_{10}Sn_2CoO_{22}$	$BaO-B_2O_3$	1260	3	Also other compositions	110	617
$Ba_2Ho(Ru, Cu)O_6$	PbO–PbF <sub>2</sub>	1250	3		290	490
$BaAlBO_3F_2$	NaF		9.5		260	287

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Crystal	Flux <sup>a</sup>	$T_{\max}$ (°C)	mm	Remarks	Vol.	Page
BaB <sub>2</sub> O <sub>4</sub>	NaCl–Na <sub>2</sub> O	880		Other studies exist	97	613
BaCoO <sub>3</sub>	NaOH–KOH	750	2		430	52
Ba(Fe, Co) <sub>2</sub> As <sub>2</sub>	(Fe, Co)As	1190	10	Other studies exist	321	55
BaFe <sub>12</sub> O <sub>19</sub>	Na <sub>2</sub> O–B <sub>2</sub> O <sub>3</sub>	1200	10		169	509
BaFe <sub>2</sub> (As, P) <sub>2</sub>	BaAs–BaP	1150	5		446	39
BaMoO <sub>4</sub>	LiCl	700	3		53	627
Ba(Pb, Bi)O <sub>3</sub>	PbO–PbO <sub>2</sub> –Bi <sub>2</sub> O <sub>3</sub>	1080	6	Also other studies	151	295
BaSO <sub>4</sub>	LiCl–KCl	600	15		234	533
BaTiO <sub>3</sub>	KF	1200	7	Published in 2017	468	753
BaTiO <sub>3</sub> :F	LiF–BaF <sub>2</sub> –LiBO <sub>2</sub>	1130	7		67	79
Be <sub>3</sub> Al <sub>2</sub> Si <sub>6</sub> O <sub>18</sub> :Cr	V <sub>2</sub> O <sub>5</sub> –Li <sub>2</sub> O–P <sub>2</sub> O <sub>5</sub>	1000			193	648
BeO	K <sub>2</sub> MoO <sub>4</sub> –MoO <sub>3</sub>	1100			42	284
Bi <sub>2</sub> Ru <sub>2</sub> O <sub>7</sub>	Bi <sub>2</sub> O <sub>3</sub> –V <sub>2</sub> O <sub>5</sub>	1150	1		68	647
Bi <sub>2</sub> TeI	Bi	850	5		440	26
Bi <sub>2</sub> Ti <sub>2</sub> O <sub>7</sub>	Bi <sub>2</sub> O <sub>3</sub> –V <sub>2</sub> O <sub>5</sub>	1300	10	Also other Bi–Ti–O phases	41	317
Bi <sub>2</sub> WO <sub>6</sub>	WO <sub>3</sub> –Na <sub>2</sub> O–NaF	900	10	Also other studies	54	217
Bi <sub>4</sub> Ti <sub>3</sub> O <sub>12</sub> :Nd	Bi <sub>2</sub> O <sub>3</sub>	1250	10	Other studies exist	310	2471
Bi <sub>6</sub> Mo <sub>2</sub> O <sub>15</sub>	Various		6	Other phases studied	51	377
BiFeO <sub>3</sub>	Bi <sub>2</sub> O <sub>3</sub>	852	2		318	936
BiFeO <sub>3</sub>	Bi <sub>2</sub> O <sub>3</sub> –B <sub>2</sub> O <sub>3</sub>	850	5		129	515
BiFeO <sub>3</sub> –PbTiO <sub>3</sub>	PbO–Bi <sub>2</sub> O <sub>3</sub>	1200	5		285	156
Bi(Sc,Ga)O <sub>3</sub> –PbTiO <sub>3</sub>	Pb <sub>3</sub> O <sub>4</sub> –Bi <sub>2</sub> O <sub>3</sub>	1250	8		247	131
Bi:ScO <sub>3</sub> –PbTiO <sub>3</sub>	Pb <sub>3</sub> O <sub>4</sub> –Bi <sub>2</sub> O <sub>3</sub>	1200	15		236	210
BN	Ni–Cr	1500	2	Also other studies	403	110

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(continued)	Crystal	Flux <sup>a</sup>	$T_{\max}$ (°C)	mm	Remarks	Vol.	Page
	BP	Ni <sub>2</sub> P	1200	5		33	53
	Ca <sub>2</sub> Al <sub>2</sub> SiO <sub>7</sub>	PbO–PbF <sub>2</sub>	1200	3	Other related compounds	102	919
	(Ca <sub>2</sub> CoO <sub>3</sub> ) <sub>0.62</sub> (CoO <sub>2</sub> )	SrCl <sub>2</sub>	927	5	Sr-doped	276	519
	Ca <sub>2</sub> GeO <sub>4</sub> :Cr	CaCl <sub>2</sub> –CaF <sub>2</sub>	1050	10		211	295
	Ca <sub>3</sub> Co <sub>4</sub> O <sub>9</sub>	K <sub>2</sub> CO <sub>3</sub>	895	10	Other fluxes studied	277	246
	Ca <sub>3</sub> Si <sub>2</sub> O <sub>7</sub> ·1/3CaCl <sub>2</sub>	CaCl <sub>2</sub>	1300	15		52	660
	Ca <sub>4</sub> PtO <sub>6</sub>	CaCl <sub>2</sub> –CaF <sub>2</sub>	1000	2		51	1
	CaCu <sub>3</sub> Ti <sub>4</sub> O <sub>12</sub>	CuO–TiO <sub>2</sub>	1200	6		408	60
	CaF <sub>2</sub>	KCl	1000	10	Also NaCl, CaCl <sub>2</sub> fluxes	44	625
	Ca(Fe, Co)AsF	CaAs	1230	1		451	161
	CaO	LiF–CaF <sub>2</sub>	1250	3		39	223
	CaTiO <sub>3</sub>	KF	1170	2	Also other fluxes	94	125
	CaV <sub>3</sub> O <sub>7</sub>	NaVO <sub>3</sub>	900	8	CaV <sub>4</sub> O <sub>9</sub> also grown	240	170
	CdCr <sub>2</sub> O <sub>4</sub>	Bi <sub>2</sub> O <sub>3</sub> –V <sub>2</sub> O <sub>5</sub>	1210	2.5	Also PbO flux	54	607
	CdCr <sub>2</sub> Se <sub>4</sub>	CdCl <sub>2</sub>	900	4		40	253
	CdGa <sub>2</sub> O <sub>4</sub>	PbO–B <sub>2</sub> O <sub>3</sub>	1250	1.2		171	131
	CdGeAs <sub>2</sub>	Bi	750	20		28	138
	CdGeP <sub>2</sub>	Bi	830	12		50	567
	CdTiO <sub>3</sub>	KF	1120	2		94	125
	(Ce, Pr)O <sub>2</sub>	Na <sub>2</sub> B <sub>4</sub> O <sub>7</sub> –NaF	1200	3	Also PbF <sub>2</sub> -based flux	87	463
	CeFe <sub>2</sub>	Ce	1100		Also other rare earths	225	155
	CeO <sub>2</sub>	PbO–PbF <sub>2</sub>	1330	8	Additives used	66	346
	CeO <sub>2</sub> :Yb	PbF <sub>2</sub>	1240	3		35	239
	CeRuPO	Sn	1500	2.5		310	1875

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Crystal	Flux <sup>a</sup>	$T_{\max}$ (°C)	mm	Remarks	Vol.	Page
(Co, Mn) <sub>3</sub> O <sub>4</sub>	PbF <sub>2</sub>	1170	4	Evaporation	344	65
Co <sub>3</sub> (Sn, In) <sub>2</sub> S <sub>2</sub>	Sn-In-Pb	1050	7		426	208
CoFe <sub>2</sub> O <sub>4</sub>	Na <sub>2</sub> B <sub>4</sub> O <sub>7</sub>	1350	5		289	605
CoFe <sub>2</sub> O <sub>4</sub> :Dy	Na <sub>2</sub> B <sub>4</sub> O <sub>7</sub>	1350			340	171
CoV <sub>2</sub> O <sub>6</sub>	V <sub>2</sub> O <sub>5</sub> -PbCl <sub>2</sub>	800	10		388	103
Cr <sub>2</sub> O <sub>3</sub>	K <sub>2</sub> Cr <sub>2</sub> O <sub>7</sub>	1200	7	Other studies and fluxes	47	551
CsAu <sub>2</sub> X <sub>6</sub>	CsX-Au	630	0.6	X = Br, I	355	13
CsNiMF <sub>6</sub>	CsCl-NH <sub>4</sub> HF <sub>2</sub>	1200	12	M = Fe, Cr	54	610
CsVF <sub>4</sub>	PbCl <sub>2</sub> -NH <sub>4</sub> HF <sub>2</sub>	860	12	Also other fluorides	47	159
CuAlO <sub>2</sub>	Cu <sub>2</sub> O	1160	2		310	4325
CuGaS <sub>2</sub>	Pb		6	Also Sn flux	53	451
CuGaSe <sub>2</sub>	In	1000		Also other studies	84	673
CuGeO <sub>3</sub>	Bi <sub>2</sub> O <sub>3</sub>	1050	40	Co, Ga doped; other studies	204	311
Cu(In, Ga) <sub>2</sub> S <sub>2</sub>	CsCl	1030	4		412	16
CuIr <sub>2</sub> S <sub>4</sub>	Bi	1000	1		210	772
CuO	BaO-B <sub>2</sub> O <sub>3</sub>	1000	35	BaCuO <sub>2</sub> , also grown	129	239
CuSb <sub>2</sub> O <sub>6</sub>	V <sub>2</sub> O <sub>5</sub>	1000	2		72	753
CuV <sub>2</sub> O <sub>6</sub>	V <sub>2</sub> O <sub>5</sub> -K <sub>2</sub> SO <sub>4</sub>	600	3		231	498
CuWO <sub>4</sub>	Na <sub>2</sub> WO <sub>4</sub> -CuCl <sub>2</sub>	850	40		88	379
DyFeO <sub>3</sub>	PbO-PbF <sub>2</sub> -B <sub>2</sub> O <sub>3</sub>	1245	20	MoO <sub>3</sub> added	29	281
Er <sub>2</sub> Si <sub>2</sub> O <sub>7</sub>	PbO-PbF <sub>2</sub> -MoO <sub>3</sub>	1270	3	Also KF added	43	336
Eu <sub>2</sub> O <sub>3</sub>	NaF	1200	5		41	309
(Fe, Ga) <sub>2</sub> O <sub>3</sub>	Bi <sub>2</sub> O <sub>3</sub> -Na <sub>2</sub> O	1250			87	578
Fe <sub>2</sub> O <sub>3</sub>	PbO-V <sub>2</sub> O <sub>5</sub>	1250	8	Solubility study	49	182

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Crystal	Flux <sup>a</sup>	$T_{\max}$ (°C)	mm	Remarks	Vol.	Page
$\text{Fe}_2\text{O}_3$	$\text{V}_2\text{O}_5\text{-KCl}$	900	5	37 fluxes tried	58	636
$\text{FeBO}_3$	$\text{PbO-PbF}_2$	870	18		71	607
$\text{FeS}_2$	Te	650	7	Temp. gradient	92	287
$\text{FeSi}_2$	Zn	930	1	Vol.: 237-239	237	1971
$\text{Gd}_2\text{GeO}_4$	$\text{Li}_2\text{O-B}_2\text{O}_3$			Other phases studied	426	25
$\text{GdPO}_4$	$\text{Li}_2\text{O-MoO}_3$	950	8	Other studies exist	310	1455
$\text{Gd}_2\text{GeMoO}_8\text{:Yb}$	$\text{MoO}_3$	1100	4		318	991
$\text{GdRh}_2\text{Si}_2$	In	1550			419	37
$\text{In}_5\text{S}_4$	Sn	1100	2		52	673
$\text{InBO}_3$	PbO	1300	65	Part of seeded study	64	385
$\text{InBO}_3\text{:Tb}$	$\text{LiBO}_2$	1150	30		99	799
(K, Li)TaO <sub>3</sub>	$\text{K}_2\text{O}$	1325			56	673
(K, Na)NbO <sub>3</sub>	$\text{NaF}_2$	1250			46	274
$\text{K}_{1.98}\text{Fe}_{1.98}\text{Sn}_{6.02}\text{O}_{16}$	$\text{K}_2\text{O-MoO}_3\text{-B}_2\text{O}_3$	1000	3		390	88
$\text{K}_{4+}\text{Fe}_{11}\text{O}_{17}$	$\text{B}_2\text{O}_3\text{-K}_2\text{O-KF}$	1200	6.6		71	253
$\text{K}_3\text{V}_3\text{F}_{14}$	$\text{PbCl}_2$	850	6	Also $\text{KTiF}_3$ , $\text{VF}_2$	33	165
$\text{KB}_2(\text{BO}_3)\text{F}_2$	$\text{KF-B}_2\text{O}_3$	800	30	Also other studies	318	610
$\text{KFeF}_3$	$\text{PbCl}_2\text{-NH}_4\text{HF}_2$	820	3	Also $\text{RbFeF}_3$ , $\text{CrF}_2$ , $\text{KVF}_4$	29	301
$\text{KMFe}_3$	$\text{PbCl}_2\text{-NH}_4\text{HF}_2$	960	5	$M = \text{Fe, Co, Ni}$	39	243
$\text{KNbB}_2\text{O}_6$	$\text{K}_2\text{B}_4\text{O}_7$	975	5	Also other compositions	220	263
$\text{KNiF}_3$	$\text{KCl-KHF}_2$	1050	8		54	610
$\text{K(Ta, Nb)O}_3$	$\text{K}_2\text{O}$	1400	35	Also other studies	59	468
$\text{KTiOPO}_4$	$\text{K}_2\text{WO}_4\text{-P}_2\text{O}_5$	1000	10	Other studies/isomorphs	75	390
(La, Na)Fe <sub>2</sub> As <sub>2</sub>	NaAs	1150	2	Reaction w/ $\text{Al}_2\text{O}_3$ crucible	416	62

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Crystal	Flux <sup>a</sup>	$T_{\max}$ (°C)	mm	Remarks	Vol.	Page
(La, Pr)AlO <sub>3</sub>	PbO–PbF <sub>2</sub> –B <sub>2</sub> O <sub>3</sub>	1300	15	MoO <sub>3</sub> also added	33	150
La <sub>2/3</sub> TiO <sub>3-x</sub>	KF–Na <sub>2</sub> B <sub>4</sub> O <sub>7</sub>	1000	3	Different phase at 950 °C	96	490
La <sub>2</sub> Cu <sub>2</sub> O <sub>5</sub>	CuO	1115	7		212	142
La <sub>5</sub> Pb <sub>3</sub> O	Co	1150	4	Reaction w/ Al <sub>2</sub> O <sub>3</sub> crucible	416	62
LaAlO <sub>3</sub> :Cr	PbF <sub>2</sub>	1270	5		47	315
LaBO <sub>3</sub>	PbO–B <sub>2</sub> O <sub>3</sub>	1240		Solubility study	58	111
LaCuOS	NaCl–KCl	850	3		311	114
Li <sub>2</sub> MnO <sub>3</sub>	LiCl	900	4		66	257
Li <sub>3</sub> Ba <sub>2</sub> Nd <sub>3</sub> (MoO <sub>4</sub> ) <sub>8</sub>	Li <sub>2</sub> MoO <sub>4</sub>	1000	40		381	61
Li <sub>3</sub> ThF <sub>7</sub>	LiCl–ZnCl <sub>2</sub>	900	4.7	Also other compounds	40	157
Li <sub>4</sub> Ti <sub>5</sub> O <sub>12</sub>	LiF–LiBO <sub>2</sub>	1000	2	Also LiTi <sub>2</sub> O <sub>4</sub>	250	139
LiAlSiO <sub>4</sub>	LiF–AlF <sub>3</sub>	1100	15		42	289
LiCuVO <sub>4</sub>	LiVO <sub>3</sub> –LiCl	560	4	Also other studies	220	345
LiInGeO <sub>4</sub> :Cr	Bi <sub>2</sub> O <sub>3</sub>	1070	20		274	149
LiMo <sub>3</sub> Ni <sub>5</sub> O <sub>12</sub>	Li <sub>2</sub> O–MoO <sub>3</sub>	1300	8	Also Ni=Mg	34	301
LiNd(MoO <sub>4</sub> ) <sub>2</sub>	Li <sub>2</sub> O–MoO <sub>3</sub>	700	2		423	1
(Mg, Fe)SiO <sub>3</sub>	Li <sub>2</sub> O–MoO <sub>3</sub> –V <sub>2</sub> O <sub>5</sub>	1014	8		200	155
MgAl <sub>2</sub> O <sub>4</sub>	PbO–PbF <sub>2</sub> –B <sub>2</sub> O <sub>3</sub>	1270		Intentional twinning	49	753
MgSiO <sub>3</sub>	Li <sub>2</sub> O–MoO <sub>3</sub> –V <sub>2</sub> O <sub>5</sub>	950	8	Also other studies	180	206
MgSiO <sub>3</sub> :Ti/Ni	Li <sub>2</sub> O–MoO <sub>3</sub> –V <sub>2</sub> O <sub>5</sub>	950	1.5		329	86
Mn <sub>2</sub> V <sub>2</sub> O <sub>7</sub>	SrV <sub>2</sub> O <sub>6</sub>	1080	5		310	171
MnSi	Ga	1200	2.4		229	532
MnSiO <sub>3</sub>	MnCl <sub>2</sub>	920	7		94	981
(Mo, W)Se	Sb	1100	10	Also Se, Te, Bi, PbCl <sub>2</sub> flux	76	93

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(continued)	Crystal	Flux <sup>a</sup>	$T_{\max}$ (°C)	mm	Remarks	Vol.	Page
	$\text{MoO}_3$	$\text{Na}_2\text{MoO}_4$	670	30		194	195
	$(\text{Na}, \text{K})_{1/2}\text{Bi}_{1/2}\text{TiO}_3$	$\text{Bi}_2\text{O}_3\text{-Na}_2\text{O-K}_2\text{O}$	1100	5		281	364
	$(\text{Na}, \text{K})\text{Fe}_x\text{Se}_2$	$\text{NaCl}$	720			405	1
	$\text{Na}_{1/2}\text{Bi}_{1/2}\text{TiO}_3\text{-BaTiO}_3$	$\text{Bi}_2\text{O}_3$	1300	13	Also other studies	441	64
	$\text{Na}_2\text{Nd}_5\text{Pb}_6(\text{PO}_4)_6\text{Cl}_2$	$\text{PbO-PbCl}_2$	1000	5		43	81
	$\text{Na}_2\text{Ti}_2\text{Sb}_2\text{O}$	$\text{NaSb}$	1100	4.2		265	571
	$\text{Na}_2\text{W}_4\text{O}_{13}$	$\text{Na}_2\text{O}$	1100	35		229	477
	$\text{Na}_3\text{Fe}_3\text{F}_{14}$	$\text{NaCl-CoCl}_2$	650	2	Also Fe=Mn, Ni	32	211
	$\text{Na}_8\text{Si}_{16}$	$\text{Na-Sn}$	450	1.5	Evaporation	450	164
	$\text{NaCa}_2\text{M}_2\text{V}_3\text{O}_{12}$	$\text{Na}_2\text{O-V}_2\text{O}_5\text{-PbO}$	1100	10	$M = \text{Mg, Co, Mn}$	52	650
	$\text{NaCu}_2\text{O}_2$	$\text{CuO}$	940	7		263	338
	$\text{Na}(\text{V}, \text{Ti})_2\text{O}_5$	$\text{NaVO}_3$	800	12		210	646
	$\text{NaV}_2\text{O}_5$	$\text{NaVO}_3$	800	10		181	314
	$\text{Na}_3\text{Co}_2\text{O}_4$	$\text{NaOH-NaCl}$	550	5		310	665
	$\text{Na}_4\text{Ti}_4\text{O}_8$	$\text{NaBO}_3$	1265	14	Also Ti=Fe, Ni	43	153
	$\text{Nb}_5\text{Sn}_2\text{Ga}$	$\text{Sn-Ga}$	1400	10	Also $\text{Ta}_5\text{SnGa}_2, \text{V}_5\text{Sn}_5\text{Ga}_3$	99	969
	$\text{NBC}$	$\text{Ni}$	1400	2		62	557
	$(\text{Nd}, \text{Dy})\text{Fe}_3(\text{BO}_3)_4$	$\text{Bi}_2\text{O}_3\text{-B}_2\text{O}_3\text{-MoO}_3$	1000	2		312	2427
	$(\text{Nd}, \text{La})\text{P}_5\text{O}_{12}$	$\text{H}_3\text{PO}_4$	700	10	Also other studies	35	329
	$(\text{Nd}, \text{Pr})\text{GaO}_3$	$\text{PbO-PbF}_2\text{-MoO}_3$	1280	4.5		128	699
	$\text{Nd}_3\text{BWO}_6\text{:Yb}$	$\text{PbO}$	1100	10		247	467
	$\text{Nd}_4\text{Ca}_2\text{Ti}_6\text{O}_{20}$	$\text{PbO}$	1280	10	Other fluxes studied	65	576
	$\text{NdOCl}$	$\text{NdCl}_3$	1350	10		57	194
	$\text{NdTi}_2\text{O}_{19}$	$\text{Li}_2\text{B}_4\text{O}_7$		3		224	67

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(continued)	Crystal	Flux <sup>a</sup>	$T_{\max}$ (°C)	mm	Remarks	Vol.	Page
	Ni <sub>3</sub> SiO <sub>4</sub>	Li <sub>2</sub> O–MoO <sub>3</sub>	1400	10		33	193
	Ni <sub>3</sub> V <sub>2</sub> O <sub>8</sub>	SrO–V <sub>2</sub> O <sub>5</sub>	1000	3		297	1
	NpPd <sub>3</sub>	Pb	1050	3		320	52
	(Pb, La)(Zr, Sn, Ti)O <sub>3</sub>	PbO–PbF <sub>2</sub> –B <sub>2</sub> O <sub>3</sub>	1200	2	Also other studies	318	860
	Pb <sub>2</sub> Ru <sub>2</sub> O <sub>6,5</sub>	PbO	1250	9		271	445
	PbB <sup>1</sup> <sub>1/2</sub> B <sup>1</sup> <sub>1/2</sub> O <sub>3</sub>	PbO–PbF <sub>2</sub> –B <sub>2</sub> O <sub>3</sub>	1200	6	B <sup>1</sup> B <sup>1</sup> = InNb, InTa, YbNb, YbTa, MgW	310	2767
	PbCo <sub>1/2</sub> W <sub>1/2</sub> O <sub>3</sub>	PbO	1230	17	Also other studies	82	396
	PbFe <sub>1/2</sub> Nb <sub>1/2</sub> O <sub>3</sub>	PbO	1260	15		56	541
	PbFe <sub>1/2</sub> Ta <sub>1/2</sub> O <sub>3</sub>	PbO	1230	5		82	396
	PbFe <sub>1/2</sub> W <sub>1/2</sub> O <sub>3</sub>	PbO–B <sub>2</sub> O <sub>3</sub>	1030	3		167	628
	PbIn <sub>1/2</sub> Nb <sub>1/2</sub> O <sub>3</sub> –PbTiO <sub>3</sub>	PbO–PbF <sub>2</sub> –B <sub>2</sub> O <sub>3</sub>	1200	20		229	299
	PbMg <sub>1/3</sub> Nb <sub>2/3</sub> O <sub>3</sub> –PbTiO <sub>3</sub>	PbO–Pb <sub>3</sub> O <sub>4</sub> –B <sub>2</sub> O <sub>3</sub>	1090	6	Other studies exist	289	134
	PbMg <sub>1/3</sub> Nb <sub>2/3</sub> O <sub>3</sub> –PbTiO <sub>3</sub>	PbO–H <sub>3</sub> BO <sub>3</sub>	1070	14	BiZn <sub>1/2</sub> Ti <sub>1/2</sub> O <sub>3</sub> doped	318	839
	PbMg <sub>1/3</sub> Ta <sub>2/3</sub> O <sub>3</sub> –PbTiO <sub>3</sub>	PbO–Pb <sub>3</sub> O <sub>4</sub> –B <sub>2</sub> O <sub>3</sub>	1130	4	Also previous study	310	594
	PbMn <sub>1/2</sub> Nb <sub>1/2</sub> O <sub>3</sub>	PbO	1260	6		56	541
	PbSc <sub>1/2</sub> Nb <sub>1/2</sub> O <sub>3</sub> –PbTiO <sub>3</sub>	PbO–B <sub>2</sub> O <sub>3</sub>	1300	4	Other studies exist	250	118
	PbTiO <sub>3</sub>	PbO	1100	5	Other studies exist	128	867
	PbWO <sub>4</sub>	Na <sub>2</sub> WO <sub>4</sub>	950	8		57	452
	PbYb <sub>1/2</sub> Nb <sub>1/2</sub> O <sub>3</sub> –PbTiO <sub>3</sub>	Pb <sub>3</sub> O <sub>4</sub>	1200	6		234	415
	PbZn <sub>1/3</sub> Nb <sub>2/3</sub> O <sub>3</sub> –PbTiO <sub>3</sub>	PbO	1250	30	Other studies exist	216	311
	Pb(Zr, Ti)O <sub>3</sub>	PbO	1170	10		33	29
	Pd(Co, Mg)O <sub>2</sub>	PdCl <sub>2</sub>	700	1	Other studies exist	226	277
	PdCrO <sub>2</sub>	NaCl	880	3.5		312	3461
	(R, Pb)MnO <sub>3</sub>	PbO–PbF <sub>2</sub>	1050	4	R = La, Nd, Pr, other studies	275	e163

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Crystal	Flux <sup>a</sup>	$T_{\max}$ (°C)	mm	Remarks	Vol.	Page
$R_{2/3}TiO_{3-x}$	KF-Na <sub>2</sub> B <sub>4</sub> O <sub>7</sub>	950	4	$R = Nd, Sm, Gd$	99	875
$R_2Ge_2O_7$	PbO-PbF <sub>2</sub> -MoO <sub>3</sub>	1270		Also K <sub>2</sub> O-KF added	43	336
$R_2GeMoO_8$	PbO-PbF <sub>2</sub> -MoO <sub>3</sub>	1290			43	336
$R_2MgGa_{12}$	Ga	1150	5	$R = Pr, Nd, Sm; M = Ni, Cu$	312	1098
$R_2Si_2O_7$	PbO-PbF <sub>2</sub> -MoO <sub>3</sub>	1270	14	$R = rare\ earth$	46	671
$R_2Sn_2O_7$	Na <sub>2</sub> B <sub>4</sub> O <sub>7</sub> -NaF	1000	2	$R = rare\ earth; a\ 2017\ paper$	468	335
$R_2Ti_2O_7$	KF-Na <sub>2</sub> B <sub>4</sub> O <sub>7</sub>	1000	3	$R = Dy, Er, Yb$	99	875
$R_3Al_5O_{12}$	PbO-PbF <sub>2</sub> -B <sub>2</sub> O <sub>3</sub>	1285	8	Also Al=Ca	54	610
$RA_{13}(BO_3)_4$	K <sub>2</sub> SO <sub>4</sub> -MoO <sub>3</sub> -B <sub>2</sub> O <sub>3</sub>	1140	5	Other studies exist; $R = Nd$	89	295
$RAIO_3$	PbO-PbF <sub>2</sub> -B <sub>2</sub> O <sub>3</sub>	1295	5	MoO <sub>3</sub> added	29	281
$RB_6$	Al	1500	1	$R = La, Eu, Y, Ce, Ba, Cs$	44	287
$RBO_3$	PbO-PbF <sub>2</sub>	1330	12	Other studies exist	54	610
$R-B-Si$	Cu-Si	1650	5	Small $R-B-C(N)$ grown	271	159
$RGaO_3$	PbO-PbF <sub>2</sub> -MoO <sub>3</sub>	1260	4	$R = La, Pr, Nd; B_2O_3\ added$	94	125
$RKM_2O_8$	K <sub>2</sub> O-MoO <sub>3</sub>	1270		Also $R_2MoO_6, R_3MoO_{12}$	43	93
$RKM_2O_8$	PbO-MoO <sub>3</sub>	1290			43	336
$R-Mg-Zn$	Mg-Zn	700	6	Quasicrystals	225	155
$RMn_2Si_2$	Pb	1350	2.5	Other studies exist	244	267
$RNi_2B_2C$	Ni <sub>2</sub> B	1500		$R = rare\ earth$	225	155
$RPO_4$	PbO-P <sub>2</sub> O <sub>5</sub>	1330	4	Also $RVO_4$ with $V_2O_5$ flux	43	336
$RPO_4$	PbO-P <sub>2</sub> O <sub>5</sub>	1350	15	$R = rare\ earth$	63	77
$RRh_3B_2$	Cu	1350	3	$R = Gd, Er, Tm$	229	521
$RT_2Ge_2$	T-Ge	1190		$R = rare\ earth; T = Ni, Cu$	225	155
$RuX_2$	Bi	1000	5	$X = S, Se, Te$	83	517

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Crystal	Flux <sup>a</sup>	$T_{\max}$ (°C)	mm	Remarks	Vol.	Page
$RVO_4$	$PbO-V_2O_5$	1360	30	Other studies exist	79	534
$Sc_2O_3$	$PbO-PbF_2-V_2O_5$	1330	2		104	672
$Sc_2(WO_4)_3$	$Bi_2O_3-WO_3$	1200	4		143	362
Si	Na	900	3	Evaporation	355	109
$Si_3N_4$	Si	1600			46	143
$SnO$	$Cu_2O$	1320			233	259
$(Sr, Pb)(Cr, Ga)_{12}O_{19}$	$PbO-PbF_2-B_2O_3$	1360	4		165	179
$Sr_2NiWO_6$	$SrCl_2$	1100	1		421	39
$Sr_3NiPtO_6$	$K_2CO_3$	1150		Other related compounds	204	122
$Sr_4PtO_6$	$SrCl_2$	1150	4		64	395
$SrCu_2(BO_3)_2$	$Na_2B_4O_7$	900	7	Also previous study	277	541
$SrGa_{12}O_{19}$	$Bi_2O_3$	1350	15		61	284
$SrNdFeO_4$	$Bi_2O_3$		15	Also other Sr-Nd-Fe-O	32	332
$SrRFeO_5$	$PbO-SrO$	1550	2	Also Fe=Al	47	739
$SrZrO_3$	$KF-NaF-LiF$	1200	0.1		94	125
TaC	Ni	1800	1.5	Also Ni-Co flux	75	454
$Th_{0.5}Pb_{0.5}VO_4$	$PbO-V_2O_5$	1300		$ThO_2$ also grown	71	289
$ThGeO_4$	$PbO-PbF_2-MoO_3$		10	Also $K_2O-KF$ added	43	336
$ThO_2$	$PbO-PbF_2$	1330	8	Additives used	66	346
$TiAs_2$	$Cs_3As_7$	900	2	Also other compounds	217	250
$TiB_2$	Al	1550	5	Other B- and C-compounds	33	207
$TmVO_4$	$LiVO_3$	1150	7	Vol.: 198/199	198	449
$U_3Bi_4$	Bi	1080			172	459
$V(PO_3)_3$	$H_3PO_4$	450	9		63	209

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Crystal	Flux <sup>a</sup>	$T_{\max}$ (°C)	mm	Remarks	Vol.	Page
WO <sub>3</sub>	PbF <sub>2</sub>	1250	25	Other fluxes studied	88	143
Y <sub>2</sub> Cu <sub>2</sub> O <sub>5</sub>	Cu <sub>2</sub> O–CuO	1350	3	Small rods	141	153
Y <sub>2</sub> Cu <sub>2</sub> O <sub>5</sub>	Cu <sub>2</sub> O	1200	1		141	150
Y <sub>3</sub> Fe <sub>3</sub> O <sub>12</sub>	PbO–B <sub>2</sub> O <sub>3</sub>	1250	10	Other studies exist	28	231
YAlO <sub>3</sub>	PbO–PbF <sub>2</sub>	1280	2	Y <sub>3</sub> Al <sub>5</sub> O <sub>12</sub> also obtained	36	255
Yb <sub>0.24</sub> Sn <sub>0.76</sub> Ru	Pb	1150	1		318	1005
YB <sub>2</sub>	Y	2000	5		223	111
YbRh <sub>2</sub> Si <sub>2</sub>	Zn	1150	20		304	114
YVO <sub>4</sub>	LiVO <sub>3</sub>	1200	4	Part of a seeded study	134	1
YVO <sub>4</sub>	V <sub>2</sub> O <sub>5</sub>	1450	10		148	193
ZnCr <sub>2</sub> O <sub>4</sub>	PbO–PbF <sub>2</sub> –MoO <sub>3</sub>	1220	1		54	607
ZnGa <sub>2</sub> O <sub>4</sub>	PbO–B <sub>2</sub> O <sub>3</sub>	1250	10	Other studies exist	171	131
ZnO	KOH–NaOH–LiOH	260	18		336	56
ZnO:M	KOH	600	10	M = Cr, Mn, Fe, Co	314	123
ZnS	PbCl <sub>2</sub>	950	2	Temp. gradient; other studies	267	74
ZnSiO <sub>4</sub>	Pb <sub>2</sub> ZnSi <sub>2</sub> O <sub>7</sub>	1300		ZnF <sub>2</sub> also added	60	219
ZnSiO <sub>4</sub>	Li <sub>2</sub> MoO <sub>4</sub>	1300	30		114	373
ZrMo <sub>2</sub> O <sub>8</sub>	Li <sub>2</sub> MoO <sub>4</sub>	750	3		404	100
ZrMO <sub>4</sub>	Na <sub>2</sub> O–MoO <sub>3</sub>	1350	5	M = Si, Ge; also Zr=Hf	116	151
ZrO <sub>2</sub> –R <sub>2</sub> O <sub>3</sub>	KF–Na <sub>2</sub> B <sub>4</sub> O <sub>7</sub>	950	3	Also HfO <sub>2</sub> –R <sub>2</sub> O <sub>3</sub>	94	287
ZrO <sub>2</sub> –Y <sub>2</sub> O <sub>3</sub>	KF–Na <sub>2</sub> B <sub>4</sub> O <sub>7</sub>	910	1	Evaporation	75	630
ZrSiO <sub>4</sub>	PbO–PbF <sub>2</sub> –MoO <sub>3</sub>		5		43	336
ZrSiO <sub>4</sub>	Li <sub>2</sub> WO <sub>4</sub> –WO <sub>3</sub>	1300	2	Many dopants studied	125	431
ZrW <sub>2</sub> O <sub>8</sub>	WO <sub>3</sub>	1300	10		212	167
ZrW <sub>2</sub> O <sub>8</sub>	WO <sub>3</sub>	1280	4	Evaporation	343	115

<sup>a</sup>For alkali and alkali-earth oxides, corresponding carbonates are usually used as the starting material

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