

SNLO Example #	Crystal Nonlinear Optics: with SNLO examples book chapter.exercise	SNLO function	Description / keywords
1	6.2, 6.6, 6.7, 6.9, 17.3	PW-mix-SP	fs, second-harmonic generation
2	6.5, 6.8	PW-mix-SP	ps, chirped-pulse second-harmonic generation
3	8.4	Opoangles	OPO/OPA phase matching
4	8.5	GVM	noncollinear phase match and group velocity match
5	4.3, 8.3	GVM	noncollinear phase match and group velocity match
6	6.13	PW-mix-SP	ps, second-harmonic generation, pulse-compression
7	8.2	GVM	noncollinear phase match and group velocity match
8	6.1	PW-mix-SP	fs, linear pulse propagation
9		2D-mix-LP	self focusing by $n^2$
10		QPM	quasephase match in KNbO <sub>3</sub> 752 nm pump
11	6.3, 6.4,	PW-mix-SP	fs, second-harmonic generation, optimum group velocities and group delay dispersion
12	6.10, 6.11	PW-mix-BB	broadbandwidth, ns, second-harmonic generation
13	8.6	PW-mix-SP	chirped pulse OPA
14	7.1, 7.2, 7.3, 7.4	2D-mix-LP	cw, second-harmonic generation with spatial walkoff
15	2.1	Ref. Ind.	Ref. Ind. of KNbO <sub>3</sub>
16	3.1	PW-mix-LP	cw, difference-frequency mixing
17	6.14	PW-mix-SP	fs, chirped-pulse, sum-frequency mixing, pulse & chirp shaping using group velocity differences
18	3.2	PW-mix-LP	cw OPA
19	3.8	PW-mix-LP	cw eigenmode mixing
20	3.4	PW-mix-LP	cw, sum-frequency mixing with one strong red wave ( $S_2 \gg S_0$ )
21	3.5	PW-mix-LP	ns, parametric gain & back conversion
22	3.6	PW-mix-LP	cw, sum-frequency mixing, equal red photon numbers
23	3.7	PW-mix-LP	ns, second-harmonic generation, nonzero $\Delta k$ , cascade mixing phase shifts
24	17.2	2D-mix-LP	cw, second-harmonic generation, free & driven second harmonic beams with ( $\Delta k_L \gg 1$ )
25	17.1	Bmix	phase match outside principal planes of do-it-yourself biaxial crystal ZZ_B
26		2D-mix-LP	ns, second-harmonic generation with top-hat beam profiles
27	3.3	PW-mix-LP	cw, three wave mixing
28	4.7, 4.9	Qmix	Qmix
29	10.5	2D-cav-LP	resonating cw light in a stable ring optical cavity
30	4.1	Bmix	phase matching outside principal planes for biaxial crystal CBO
31	4.2	Qmix	phase matching in principal planes for biaxial crystal CBO

32	4.6, 4.10	QPM	quasiphasematching in LiNbO3
33	4.4	Opoangles	angle phasematching OPA in BBO
34	10.2	2D-cav-LP	resonating cw light in a stable linear optical cavity
35		PW-OPO-SP	synch-pumped picosecond OPO
36	10.1	PW-cav-LP	cw, intracavity second-harmonic generation
37	10.12	2D-cav-LP	cw, intracavity sum-frequency mixing, red 1 and red 2 resonant
38	7.6, 7.8, 7.12	2D-mix-LP	cw, focused beam second harmonic generation without walkoff
39	7.12	PW-mix-LP	cw, second-harmonic generation
40	10.13	PW-cav-LP	cw, intracavity sum-frequency mixing, red 1 and red 2 resonant
41		PW-cav-LP	cw, OPO with singly resonant ring cavity
42		2D-cav-LP	cw, OPO with singly resonant ring cavity
43		2D-mix-LP	ns, second-harmonic generation with walkoff and collimated beams
44	7.5	2D-mix-LP	ns OPA with no walkoff and collimated beams
45		2D-cav-LP	cw, OPO with doubly resonant ring cavity
46		PW-cav-LP	cw, OPO with doubly resonant ring cavity
47		2D-cav-LP	cw, OPO with doubly resonant ring cavity
48	12.6, 12.7, 12.8, 12.10, 12.11, 12.12, 12.13, 12.14, 12.15, 12.16	PW-OPO-BB	ns broadband OPO
49	12.18, 12.19, 12.20, 12.21, 12.24	2D-cav-LP	ns, singly resonant, ring cavity OPO with walkoff
50		2D-cav-LP	cw, singly resonant, ring cavity OPO
51		PW-cav-LP	cw, singly resonant, ring cavity OPO
52		PW-cav-LP	cw, pump-enhanced ring cavity OPO
53		PW-cav-LP	cw, pump-enhanced, ring cavity OPO with relaxation oscillations
54		2D-cav-LP	cw, pump-enhanced ring cavity OPO
55		PW-cav-LP	cw, triply resonant, ring cavity OPO
56	10.6, 10.7, 10.9, 10.11, 10.14, 10.15, 10.16, 10.18, 10.20, 10.22, 10.23, 10.24, 10.25, 10.26, 10.27, 10.28, 10.29, 10.30, 10.31, 10.32	PW-cav-LP	cw, intracavity sum-frequency generation, with red1 resonant, in ring cavity
57	10.8, 10.17, 10.19, 10.21, 10.27, 10.31, 10.32	2D-cav-LP	cw, ring cavity design
58	7.10, 7.11	2D-mix-LP	cw, second-harmonic generation with walkoff of a focused beam
59	6.12	PW-mix-BB	ns broadband OPA

60	7.7	2D-mix-LP	cw, second-harmonic generation
61	7.9	2D-mix-LP	cw, sum-frequency mixing with walkoff of a focused beam
62		2D-mix-LP	cw, sum-frequency mixing with upconversion
63	8.1	2D-mix-SP	femtosecond, second-harmonic generation of a focused beam with spatial and temporal walkoff
64	8.7	QPM	quasiphasematch of LiTaO3
65	8.8	QPM	quasiphasematch of LiNbO3
66	8.8	2D-mix-SP	fs second-harmonic generation
67	4.5	Ncpm	noncritical phasematching in LBO
68		PW-mix-BB	ns, broadband OPO
69	12.1, 12.2, 12.3, 12.4, 12.5	PW-cav-LP	ns, linear cavity OPO
70	12.17	PW-OPO-BB	ns, broadband, cross-resonant linear cavity OPO
71	11.1, 11.3, 11.4	PW-OPO-SP	ps, synch-pumped OPO
72	12.9	PW-OPO-BB	ns, broadband OPO
73	12.22, 12.23	2D-cav-LP	ns OPO
74	9.1	PW-mix-SP	fs, high gain OPA
75	10.3	2D-cav-LP	cw, mode filtering
76	9.2, 9.3	PW-mix-BB	ps OPG
77	11.2, 11.5, 11.6, 11.7, 11.8	PW-OPO-SP	fs, synch-pumped OPO
78	9.7, 9.8, 9.9	OPG	ps OPG