

Description	Manufacturer/Vendor	Part Number	Count	Unit Price
Aluminum Breadboard, 12" x 24" x 1/2", 1/4-20 Th	Thor Labs	MB1224	1	\$208.66
<b>Microscope</b>				
Damped mounting post 1 1/2" 14"	Thor Labs	DP14	1	\$199.00
Post base	Thor Labs	PB1	1	\$23.70
Mounting clamp for post	Thor Labs	C1500	4	\$65.00
cage rod, 1/2"	Thor Labs	ER05	6	\$4.94
cage rod, 1"	Thor Labs	ER1	6	\$5.18
cage rod, 2"	Thor Labs	ER2	4	\$5.89
cage rod, 3"	Thor Labs	ER3	2	\$6.60
cage rod, 4"	Thor Labs	ER4	2	\$7.08
cage rod, 6"	Thor Labs	ER6	2	\$8.27
cage rod, 8"	Thor Labs	ER8	2	\$9.95
30mm to 60 mm cage plate adapter	Thor Labs	LCP02	3	\$37.80
60 mm cage plate	Thor Labs	LCP01	4	\$31.30
X-Y cage translator for 30 mm cage	Thor Labs	HPT1	1	\$161.00
4-way mounting cube	Thor Labs	C4W	1	\$57.00
Cube-mounted protected silver mirror	Thor Labs	CM1-P01	1	\$144.00
Z translator cage mount	Thor Labs	SM1Z	1	\$175.40
1" optic mount for 30 mm cube	Thor Labs	B5C	1	\$29.90
30mm kinematic platform	Thor Labs	B4C	1	\$89.90
End cap with external threads, 1"	Thor Labs	SM1CP2	1	
Blank cube cover plate	Thor Labs	B1C	1	\$15.00
Adapter Nikon objective to SM1	Thor Labs	SM1A12	3	
100x objective lens	Nikon	MRP01902	1	
10x objective lens	Nikon	MRP00102	1	
Dichroic Mirror	Thor Labs	FM01	1	
Gasket for small cage plate	Thor Labs	CPG3	1	\$6.20
Quick disconnect, outer thread	custom		1	
Quick disconnect, inner thread	custom		1	
Lens tube, 3"	Thor Labs	SM1L30	1	
Lens tube, 1/2"	Thor Labs	SM1L05	1	
Lens tube, 1/3"	Thor Labs	SM1L03	1	
LED, 3 watt			1	
<b>Stage</b>				
Linear stage	Newport	423	2	\$250.00
Picomotor actuator	Newfocus	8302	2	\$525.00
Picomotor driver module kit	Newfocus	8763-KIT	1	\$1,348.00
Two-axis joystick	Newfocus	8754	1	\$612.00
1.5" Mounting post, 3" length	Thor Labs	P3	1	\$33.00
Mounting post base	Thor Labs	PB1	1	\$27.80
Slide holder	fabricated in house		1	
<b>Detector Branch</b>				
cage rod, 4"	Thor Labs	ER4	3	
Lens tube, 1/2"	Thor Labs	SM1L05	2	
lens, +50mm uncoated	Thor Labs	LB1471	1	\$21.80
Neutral density, optical density 2.0	Thor Labs	NE20B	1	\$38.00
Threaded cage plate for 30 mm cage	Thor Labs	CP02	1	\$15.63
X-Y cage translator for 30 mm cage	Thor Labs	HPT1	1	\$161.00
Quadrant Photo Diode	UDT	SPOT 9DMI	1	\$89.00
Detector (QPD) amplifier	[custom]		1	
Detector board power supply (MeanWell P25A14)	Jameco	221719PS	1	\$32.00
<b>Camera Branch</b>				
cage rod, 1.5"	Thor Labs	ER1.5	8	
cage rod, 4"	Thor Labs	ER4	4	
cage rod, 1/2"	Thor Labs	ER05	4	
Blank cube cover plate	Thor Labs	B1C	2	\$15.00
Mounting cube with clearance holes	Thor Labs	C6W	2	\$60.00
SM1 Adjustable length lens tube, 1/2" travel	Thor Labs	SM1V05	1	
SM1 Adjustable length lens tube, 1" travel	Thor Labs	SM1V10	2	
Lens tube, 1/2"	Thor Labs	SM1L05	3	
Lens tube, 1"	Thor Labs	SM1L10	1	
Threaded cage plate for 30 mm cage	Thor Labs	CP02	2	\$15.63
30 mm cage to TR adapter	Thor Labs	CP02B	1	\$13.70
SM1 coupler, external threads	Thor Labs	SM1T2	1	\$18.40
0.5" post, 1" length	Thor Labs	PH1ST	2	\$7.03
0.5" post holder, 1" length	Thor Labs	TR1	2	\$4.74
Standard base 1"x3"	Thor Labs	BA1	2	\$5.56
Right angle kinematic cage mount	Thor Labs	KCB1	1	\$104.00
Protected silver mirror, 1"	Thor Labs	PF10-03-P01	1	\$50.00
1" optic mount for 30 mm cube	Thor Labs	B5C	1	\$29.90

Description	Manufacturer/Vendor	Part Number	Count	Unit Price
30mm kinematic platform, adjustable	Thor Labs	B4C	1	\$89.90
Rotatable cover plate	Thor Labs	B3C	1	\$22.70
Dichroic Mirror	Thor Labs	FM01	1	
Shortpass filter	Thor Labs	FGS900	2	\$43.30
SM1 Series end plug	Thor Labs	SM1PL1	2	\$12.00
Camera c-mount adapter (external c-mount to int)	Thor Labs	SM1A9	1	\$18.90
CCD Camera			1	
<b>Beam Path</b>				
IR fiber-coupled laser, 845 or 980 nm, 150-250 mW			1	
Universal 14-pin butterfly laser diode mount	Thor Labs	LM14S2	1	\$315.00
Laser diode driver, 1A	Thor Labs	LDC210C	1	\$998.00
Laser diode temperature controller	Thor Labs	TED200C	1	\$968.00
SM1 to SMA Fiber Connector Adapter Plate	Thor Labs	SM1SMA	1	\$26.00
Collimating Lens, mounted	Thor Labs	C220TME-B	1	\$89.00
SM1 to 9mm Lens Adapter	Thor Labs	S1TM09	1	\$19.00
Optical cage plate gasket	Thor Labs	CPG3	3	\$6.20
Threaded cage plate for 30 mm cage	Thor Labs	CP02	3	\$15.63
Right angle kinematic cage mount	Thor Labs	KCB1	2	\$104.00
Protected silver mirror, 1"	Thor Labs	PF10-03-P01	2	\$50.00
150mm Lens, near IR achromat coated	Thor Labs	AC254-150-B	1	\$83.00
(-)40mm Lens, near IR achromat coated	Thor Labs	ACN254-040-B	1	\$96.00
SM1 Adjustable length lens tube, 1" travel	Thor Labs	SM1V10	2	
Lens tube, 1"	Thor Labs	SM1L10	2	
Lens tube, 1/2"	Thor Labs	SM1L05	3	
Thick threaded cage plate for 30 mm cage	Thor Labs	CP02T	2	\$19.95
X-Y cage translator for 30 mm cage	Thor Labs	HPT1	1	\$161.00
0.5" post, 1" length	Thor Labs	PH1ST	2	\$7.03
0.5" post holder, 1" length	Thor Labs	TR1	2	\$4.74
Standard base 1"x3"	Thor Labs	BA1	2	\$5.56
cage rod, 1/2"	Thor Labs	ER05	12	\$4.94
cage rod, 1"	Thor Labs	ER1	12	\$5.20
cage rod, 2"	Thor Labs	ER2	4	\$7.10
cage rod, 8"	Thor Labs	ER8	3	\$9.95
<b>Fluorescence branch (optional, filters and laser specs depend on fluorescent dye used)</b>				
Dichroic for 532nm laser	Chroma	T565lpxr BS	1	\$200.00
Emission filter for Cy3	Chroma	ET605/70m EM	1	\$325.00
30mm Cage filter wheel	Thor Labs	CFW6	1	\$130.00
532 nm laser with power supply, heat sink	Z-Bolt	DPSS-5-PS	1	\$119.00
30mm kinematic platform, adjustable	Thor Labs	B4C	1	\$91.70
Filter holder for 30mm cage cube platforms	Thor Labs	FFM1	1	\$56.10
Optical cage plate gasket	Thor Labs	CPG3		\$6.20
Threaded cage plate for 30 mm cage	Thor Labs	CP02	2	\$15.63
Right angle kinematic cage mount	Thor Labs	KCB1	1	\$104.00
Protected silver mirror, 1"	Thor Labs	PF10-03-P01	1	\$50.00
N-BK7 Plano-Convex Lens, Ø1", f = 200.0 mm, L	Thor Labs	LA1708	1	\$18.50
N-BK7 Plano-Concave Lens, Ø1", f = -50.0 mm,	Thor Labs	LC1715	1	\$17.40
SM1 Adjustable length lens tube, 1" travel	Thor Labs	SM1V10	1	\$32.60
Lens tube, 1"	Thor Labs	SM1L10	2	\$14.25
Lens tube, 1/2"	Thor Labs	SM1L05	2	\$12.59
Thick threaded cage plate for 30 mm cage	Thor Labs	CP02T	2	\$20.00
cage rod, 6"	Thor Labs	ER6	4	\$8.30
cage rod, 2"	Thor Labs	ER2	4	\$7.10
<b>Tools, Useful Stuff</b>				
Cage alignment plate, 1 mm	Thor Labs	CPA1	1	\$9.00
Cage alignment plate, 5 mm	Thor Labs	CPA2	1	\$9.00
IR alignment disk, 1"	Thor Labs	VISIR1	1	\$29.60
IR/Viewing alignment disk, 1"	Thor Labs	SM1A8	1	\$76.50
IR viewing card, enhanced for S-, C-, L-bands	Thor Labs	VC-1550	1	\$72.00
Spanner wrench for SM1 series	Thor Labs	SPW602	1	\$28.40
Adjustable spanner wrench	Thor Labs	SPW801	1	\$94.00
1/4"-20 Cap screw kit	Thor Labs	HW-KIT2	1	\$104.00
<b>Notes:</b>				
1. This list is organized by function, so many part numbers are repeated. See the "Parts to Order" sheet for summary of all parts needed, quantities, prices.				
2. This list does not specify a trapping laser, QPD amplifier, illuminator power supply, computer, DAQ card, or optical table, so the full cost of the apparatus is not reflected in the total shown on the "Parts to Order" sheet.				

## Summary of parts to order

Description	Manufacturer/Vendor	Part Number	Count	Unit Price	Extension	Total Cost	\$12,709.40
Detector (QPD) amplifier	[custom]		0		\$0.00		
Emission filter for Cy3	Chroma	ET605/70m EM	1	\$325.00	\$325.00		
Dichroic for 532nm laser	Chroma	T565lpxr BS	1	\$200.00	\$200.00		
Slide holder	fabricated in house		0		\$0.00		
Detector board power supply (MeanWell P25A14)	Jameco	221719PS	1	\$32.00	\$32.00		
Picomotor actuator	Newfocus	8302	2	\$525.00	\$1,050.00		
Two-axis joystick	Newfocus	8754	1	\$612.00	\$612.00		
Picomotor driver module kit	Newfocus	8763-KIT	1	\$1,348.00	\$1,348.00		
Linear stage	Newport	423	2	\$250.00	\$500.00		
10x objective lens	Nikon	MRP00102	1	\$152.95	\$152.95		
100x objective lens	Nikon	MRP01902	1	\$425.00	\$425.00		
150mm Lens, near IR achromat coated	Thor Labs	AC254-150-B	1	\$83.00	\$83.00		
f = -40.0 mm, 1" Unmounted Visible Achromat, A	Thor Labs	ACN254-040-B	1	\$81.00	\$81.00		
Blank cube cover plate	Thor Labs	B1C	3	\$15.30	\$45.90		
Rotatable cover plate	Thor Labs	B3C	1	\$22.70	\$22.70		
30mm kinematic platform	Thor Labs	B4C	3	\$91.70	\$275.10		
1" optic mount for 30 mm cube	Thor Labs	B5C	2	\$29.90	\$59.80		
Standard base 1"x3"	Thor Labs	BA1	4	\$5.56	\$22.24		
Mounting clamp for post	Thor Labs	C1500	4	\$65.00	\$260.00		
Collimating Lens, mounted	Thor Labs	C220TME-B	1	\$89.00	\$89.00		
4-way mounting cube	Thor Labs	C4W	1	\$57.90	\$57.90		
Mounting cube with clearance holes	Thor Labs	C6W	2	\$60.00	\$120.00		
30mm Cage filter wheel	Thor Labs	CFW6	1	\$132.60	\$132.60		
Cube-mounted protected silver mirror	Thor Labs	CM1-P01	1	\$144.00	\$144.00		
Threaded cage plate for 30 mm cage	Thor Labs	CP02	8	\$15.70	\$125.60		
30 mm Cage Plate Adapter	Thor Labs	CP02B	1	\$13.70	\$13.70		
Thick threaded cage plate for 30 mm cage	Thor Labs	CP02T	4	\$20.00	\$80.00		
Cage alignment plate, 1 mm	Thor Labs	CPA1	1	\$9.00	\$9.00		
Cage alignment plate, 5 mm	Thor Labs	CPA2	1	\$9.00	\$9.00		
Gasket for small cage plate	Thor Labs	CPG3	4	\$6.20	\$24.80		
Damped mounting post 1 1/2" 14"	Thor Labs	DP14	1	\$199.00	\$199.00		
cage rod, 1/2"	Thor Labs	ER05	22	\$5.00	\$110.00		
cage rod, 1"	Thor Labs	ER1	18	\$5.20	\$93.60		
cage rod, 1.5"	Thor Labs	ER1.5	8	\$5.50	\$44.00		
cage rod, 2"	Thor Labs	ER2	12	\$5.90	\$70.80		
cage rod, 3"	Thor Labs	ER3	2	\$6.60	\$13.20		
cage rod, 4"	Thor Labs	ER4	9	\$7.08	\$63.72		
cage rod, 6"	Thor Labs	ER6	6	\$8.30	\$49.80		
cage rod, 8"	Thor Labs	ER8	5	\$9.95	\$49.75		
Filter holder for 30mm cage cube platforms	Thor Labs	FFM1	1	\$56.10	\$56.10		
Shortpass filter	Thor Labs	FGS900	2	\$43.30	\$86.60		
Dichroic Mirror	Thor Labs	FM01	2	\$56.70	\$113.40		
X-Y cage translator for 30 mm cage	Thor Labs	HPT1	3	\$161.00	\$483.00		
1/4"-20 Cap screw kit	Thor Labs	HW-KIT2	1	\$104.00	\$104.00		
Right angle kinematic cage mount	Thor Labs	KCB1	4	\$104.00	\$416.00		
N-BK7 Plano-Convex Lens, Ø1", f = 200.0 mm, U	Thor Labs	LA1708	1	\$18.50	\$18.50		
lens, +50mm uncoated	Thor Labs	LB1471	1	\$21.80	\$21.80		
N-BK7 Plano-Concave Lens, Ø1", f = -50.0 mm,	Thor Labs	LC1715	1	\$17.40	\$17.40		
60 mm cage plate	Thor Labs	LCP01	4	\$31.30	\$125.20		
30mm to 60 mm cage plate adapter	Thor Labs	LCP02	3	\$37.80	\$113.40		
Laser diode driver, 1A	Thor Labs	LDC210C	1	\$998.00	\$998.00		
Universal 14-pin butterfly laser diode mount	Thor Labs	LM14S2	1	\$315.00	\$315.00		
Aluminum Breadboard, 12" x 24" x 1/2", 1/4-20 Th	Thor Labs	MB1224	1	\$208.66	\$208.66		
Neutral density, optical density 2.0	Thor Labs	NE20B	1	\$38.00	\$38.00		
1.5" Mounting post, 3" length	Thor Labs	P3	1	\$33.00	\$33.00		
Post base	Thor Labs	PB1	2	\$23.70	\$47.40		
Protected silver mirror, 1"	Thor Labs	PF10-03-P01	4	\$50.00	\$200.00		
0.5" post, 1" length	Thor Labs	PH1ST	4	\$7.03	\$28.12		
SM1 to 9mm Lens Adapter	Thor Labs	S1TM09	1	\$19.00	\$19.00		
Adapter Nikon objective to SM1	Thor Labs	SM1A12	3	\$18.40	\$55.20		
IR/Viewing alignment disk, 1"	Thor Labs	SM1A8	1	\$76.50	\$76.50		
Camera c-mount adapter (external c-mount to int	Thor Labs	SM1A9	1	\$18.90	\$18.90		
End cap with external threads, 1"	Thor Labs	SM1CP2	1	\$18.80	\$18.80		
Lens tube, 1/3"	Thor Labs	SM1L03	1	\$12.16	\$12.16		
Lens tube, 1/2"	Thor Labs	SM1L05	11	\$12.59	\$138.49		
Lens tube, 1"	Thor Labs	SM1L10	5	\$14.25	\$71.25		
Lens tube, 3"	Thor Labs	SM1L30	1	\$26.00	\$26.00		
SM1 Series end plug	Thor Labs	SM1PL1	2	\$12.00	\$24.00		
SM1 to SMA Fiber Connector Adapter Plate	Thor Labs	SM1SMA	1	\$26.00	\$26.00		
SM1 coupler, external threads	Thor Labs	SM1T2	1	\$18.40	\$18.40		

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Description	Manufacturer/Vendor	Part Number	Count	Unit Price	Extension	Total Cost	\$12,709.40
SM1 Adjustable length lens tube, 1/2" travel	Thor Labs	SM1V05	1	\$29.60	\$29.60		
SM1 Adjustable length lens tube, 1" travel	Thor Labs	SM1V10	5	\$32.60	\$163.00		
Z translator cage mount	Thor Labs	SM1Z	1	\$175.40	\$175.40		
Spanner wrench for SM1 series	Thor Labs	SPW602	1	\$28.40	\$28.40		
Adjustable spanner wrench	Thor Labs	SPW801	1	\$94.00	\$94.00		
Laser diode temperature controller	Thor Labs	TED200C	1	\$968.00	\$968.00		
0.5" post holder, 1" length	Thor Labs	TR1	4	\$4.74	\$18.96		
IR viewing card, enhanced for S-, C-, L-bands	Thor Labs	VC-1550	1	\$72.00	\$72.00		
IR alignment disk, 1"	Thor Labs	VISIR1	1	\$29.60	\$29.60		
Quadrant Photo Diode	UDT	SPOT 9DMI	1	\$89.00	\$89.00		
532 nm laser with power supply, heat sink	Z-Bolt	DPSS-5-PS	1	\$119.00	\$119.00		
LED, 3 watt			0		\$0.00		