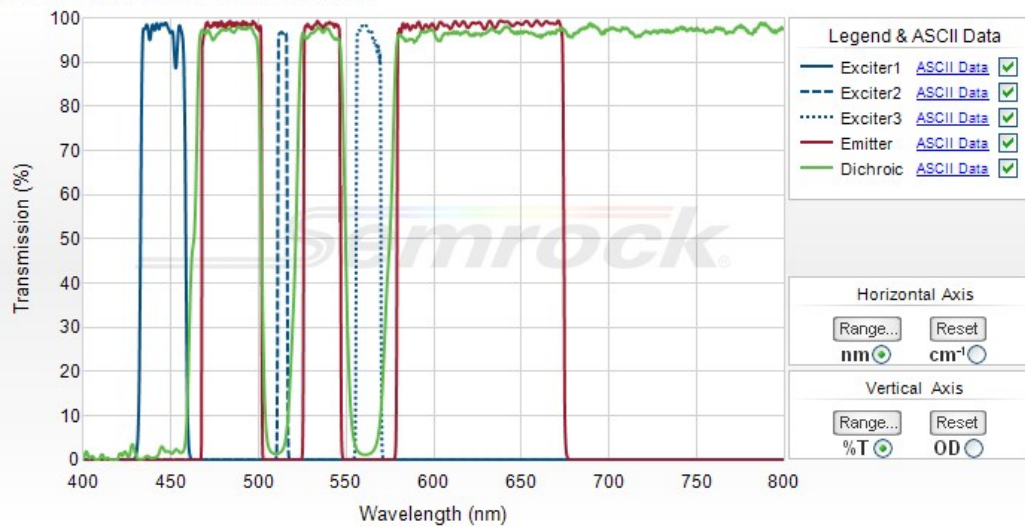


**BrightLine® Pinkel laser filter set, optimized for 442, 514, & 561 nm laser sources**

Part Number: LF442/514/561-3X-A-000



**Semrock, Inc**

3625 Buffalo Road, Suite 6  
Rochester, New York 14624

Main Phone: +1 585.594.7050 (worldwide)  
Toll Free Phone: 866.736.7625 (866-SEMROCK)  
(within US and Canada)



**BrightLine® Pinkel laser filter set, optimized for 442, 514, & 561 nm laser sources**

This "Pinkel" multiband set is optimized for laser excitation utilizing a 442 nm laser source for CFP, a 514 nm laser source for YFP, and a 561.4 or 568.2 nm laser source for mCherry. This set provides high brightness, extremely low crosstalk, and superb signal-to-noise ratio.

**Individual filters and filter sets (no cube):**

These filters sets contain individual filters. For filter sets already mounted in a holder/cube, scroll down to see complete mounted sets with cubes.

| Part Number  | Price <sup>1</sup>                                 | Stock Status                            |                    |                    |                     |  |                                    |       |                     |  |                                   |       |                     |  |                                   |       |                     |                  |   |       |                      |                            |   |       |  |  |
|--|--|---|--------------------|--------------------|---------------------|--|------------------------------------|-------|---------------------|--|-----------------------------------|-------|---------------------|--|-----------------------------------|-------|---------------------|------------------|---|-------|----------------------|----------------------------|---|-------|--|--|
| <input checked="" type="checkbox"/> LF442/514/561-3X-A-000 (Standard size set, fits most microscopes)  | \$1,695  | In Stock                                |                    |                    |                     |  |                                    |       |                     |  |                                   |       |                     |  |                                   |       |                     |                  |   |       |                      |                            |   |       |  |  |
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| Filter Role  | Filter Size  | Part Number                             | Price <sup>1</sup> |                    |                     |  |                                    |       |                     |  |                                   |       |                     |  |                                   |       |                     |                  |   |       |                      |                            |   |       |  |  |
| Single Band Exciter  | 25 mm x 5.0 mm                                     | <a href="#">FF01-448/20-25</a>          | \$355              |                    |                     |  |                                    |       |                     |  |                                   |       |                     |  |                                   |       |                     |                  |   |       |                      |                            |   |       |  |  |
| Single Band Exciter  | 25 mm x 5.0 mm                                     | <a href="#">FF01-514/3-25</a>           | \$355              |                    |                     |  |                                    |       |                     |  |                                   |       |                     |  |                                   |       |                     |                  |   |       |                      |                            |   |       |  |  |
| Single Band Exciter  | 25 mm x 5.0 mm                                     | <a href="#">FF01-563/9-25</a>           | \$305              |                    |                     |  |                                    |       |                     |  |                                   |       |                     |  |                                   |       |                     |                  |   |       |                      |                            |   |       |  |  |
| Triple Band Emitter  | 25 mm x 3.5 mm                                     | <a href="#">FF01-485/537/627-25</a>     | \$435              |                    |                     |  |                                    |       |                     |  |                                   |       |                     |  |                                   |       |                     |                  |   |       |                      |                            |   |       |  |  |
| Triple Band Dichroic   | 25.2 mm x 35.6 mm x 1.1 mm                         | <a href="#">Di01-R442/514/561-25x36</a> | \$515              |                    |                     |  |                                    |       |                     |  |                                   |       |                     |  |                                   |       |                     |                  |   |       |                      |                            |   |       |  |  |
| <input checked="" type="checkbox"/> LF442/514/561-3X-A-L01 (Leica 'Large' set)   | \$1,695  | Contact Us                              |                    |                    |                     |  |                                    |       |                     |  |                                   |       |                     |  |                                   |       |                     |                  |   |       |                      |                            |   |       |  |  |
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| Filter Role  | Filter Size  | Part Number                             | Price <sup>1</sup> |                    |                     |  |                                    |       |                     |  |                                   |       |                     |  |                                   |       |                     |                  |   |       |                      |                            |   |       |  |  |
| Single Band Exciter  | 25 mm x 5.0 mm                                     | <a href="#">FF01-448/20-25</a>          | \$355              |                    |                     |  |                                    |       |                     |  |                                   |       |                     |  |                                   |       |                     |                  |   |       |                      |                            |   |       |  |  |
| Single Band Exciter  | 25 mm x 5.0 mm                                     | <a href="#">FF01-514/3-25</a>           | \$355              |                    |                     |  |                                    |       |                     |  |                                   |       |                     |  |                                   |       |                     |                  |   |       |                      |                            |   |       |  |  |
| Single Band Exciter  | 25 mm x 5.0 mm                                     | <a href="#">FF01-563/9-25</a>           | \$305              |                    |                     |  |                                    |       |                     |  |                                   |       |                     |  |                                   |       |                     |                  |   |       |                      |                            |   |       |  |  |
| Triple Band Emitter  | 23.3 mm x 2.0 mm                                   | <a href="#">FF01-485/537/627-23.3-D</a> | \$435              |                    |                     |  |                                    |       |                     |  |                                   |       |                     |  |                                   |       |                     |                  |   |       |                      |                            |   |       |  |  |
| Triple Band Dichroic   | 22.0 mm x 29.0 mm x 1.1 mm                         | <a href="#">Di01-R442/514/561-22x29</a> | \$515              |                    |                     |  |                                    |       |                     |  |                                   |       |                     |  |                                   |       |                     |                  |   |       |                      |                            |   |       |  |  |
| <input checked="" type="checkbox"/> LF442/514/561-3X-A-L02 (Leica 'Small' set)   | \$1,949  | Contact Us                              |                    |                    |                     |  |                                    |       |                     |  |                                   |       |                     |  |                                   |       |                     |                  |   |       |                      |                            |   |       |  |  |
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| Filter Role  | Filter Size  | Part Number                             | Price <sup>1</sup> |                    |                     |  |                                    |       |                     |  |                                   |       |                     |  |                                   |       |                     |                  |   |       |                      |                            |   |       |  |  |
| Single Band Exciter  | 25 mm x 5.0 mm                                     | <a href="#">FF01-448/20-25</a>          | \$355              |                    |                     |  |                                    |       |                     |  |                                   |       |                     |  |                                   |       |                     |                  |   |       |                      |                            |   |       |  |  |
| Single Band Exciter  | 25 mm x 5.0 mm                                     | <a href="#">FF01-514/3-25</a>           | \$355              |                    |                     |  |                                    |       |                     |  |                                   |       |                     |  |                                   |       |                     |                  |   |       |                      |                            |   |       |  |  |
| Single Band Exciter  | 25 mm x 5.0 mm                                     | <a href="#">FF01-563/9-25</a>           | \$305              |                    |                     |  |                                    |       |                     |  |                                   |       |                     |  |                                   |       |                     |                  |   |       |                      |                            |   |       |  |  |
| \$1,755  | Contact Us   |   |                    |                    |                     |  |                                    |       |                     |  |                                   |       |                     |  |                                   |       |                     |                  |   |       |                      |                            |   |       |  |  |
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| Filter Role  | Filter Size  | Part Number                             | Price <sup>1</sup> |                    |                     |  |                                    |       |                     |  |                                   |       |                     |  |                                   |       |                     |                  |   |       |                      |                            |   |       |  |  |
| Single Band Exciter  | 25 mm threaded ring for Sutter Lambda filter wheel | <a href="#">FF01-448/20-25-STR</a>      | \$375              |                    |                     |  |                                    |       |                     |  |                                   |       |                     |  |                                   |       |                     |                  |   |       |                      |                            |   |       |  |  |
| Single Band Exciter  | 25 mm threaded ring for Sutter Lambda filter wheel | <a href="#">FF01-514/3-25-STR</a>       | \$375              |                    |                     |  |                                    |       |                     |  |                                   |       |                     |  |                                   |       |                     |                  |   |       |                      |                            |   |       |  |  |
| Single Band Exciter  | 25 mm threaded ring for Sutter Lambda filter wheel | <a href="#">FF01-563/9-25-STR</a>       | \$325              |                    |                     |  |                                    |       |                     |  |                                   |       |                     |  |                                   |       |                     |                  |   |       |                      |                            |   |       |  |  |
| Triple Band Emitter  | 25 mm x 3.5 mm                                     | <a href="#">FF01-485/537/627-25</a>     | \$435              |                    |                     |  |                                    |       |                     |  |                                   |       |                     |  |                                   |       |                     |                  |   |       |                      |                            |   |       |  |  |
| Triple Band Dichroic   | 25.2 mm x 35.6 mm x 1.1 mm                         | <a href="#">Di01-R442/514/561-25x36</a> | \$515              |                    |                     |  |                                    |       |                     |  |                                   |       |                     |  |                                   |       |                     |                  |   |       |                      |                            |   |       |  |  |

### Complete filter sets mounted in microscope holders/cubes:

These sets are delivered already mounted in microscope filter holders, often called 'cubes', ready to be dropped into your microscope.

#### Nikon Quadfluor for microscopes: E200, E400, E600, E800, E1000, TS100, TS100F, TE200, TE300, ME600L, L150A, and some Labophot, Optiphot, and Diaphot series

LF442/514/561-3X-A-NQF (set mounted in cube) \$2,090 In Stock

| Filter Role          | Filter Size                | Part Number                             | Price <sup>1</sup> |
|----------------------|----------------------------|---|--------------------|
| Single Band Exciter  | 25 mm x 5.0 mm             | <a href="#">FF01-448/20-25</a>          | \$355              |
| Single Band Exciter  | 25 mm x 5.0 mm             | <a href="#">FF01-514/3-25</a>           | \$355              |
| Single Band Exciter  | 25 mm x 5.0 mm             | <a href="#">FF01-563/9-25</a>           | \$305              |
| Triple Band Emitter  | 25 mm x 3.5 mm             | <a href="#">FF01-485/537/627-25</a>     | \$435              |
| Triple Band Dichroic | 25.2 mm x 35.6 mm x 1.1 mm | <a href="#">Di01-R442/514/561-25x36</a> | \$515              |
| Quadfluor cube       |                            | <a href="#">NQF</a>                     | \$395              |

#### Nikon TE 2000 for microscopes: TE 2000, 50i, 55i, 80i, 90i, Eclipse Ti, Ni, and Ci series, and any using the Epi-fluor Illuminator

LF442/514/561-3X-A-NTE (set mounted in cube) \$2,090 In Stock

| Filter Role          | Filter Size                | Part Number                             | Price <sup>1</sup> |
|----------------------|----------------------------|---|--------------------|
| Single Band Exciter  | 25 mm x 5.0 mm             | <a href="#">FF01-448/20-25</a>          | \$355              |
| Single Band Exciter  | 25 mm x 5.0 mm             | <a href="#">FF01-514/3-25</a>           | \$355              |
| Single Band Exciter  | 25 mm x 5.0 mm             | <a href="#">FF01-563/9-25</a>           | \$305              |
| Triple Band Emitter  | 25 mm x 3.5 mm             | <a href="#">FF01-485/537/627-25</a>     | \$435              |
| Triple Band Dichroic | 25.2 mm x 35.6 mm x 1.1 mm | <a href="#">Di01-R442/514/561-25x36</a> | \$515              |
| TE 2000 cube         |                            | <a href="#">NTE</a>                     | \$395              |

#### Olympus U-MF2 for microscopes: AX70, BX, BX41, BX50, BX51, BX60, BX61, BX50/51WI, BX60/61WI, IX50, IX51, IX70, IX71, IX81

LF442/514/561-3X-A-OMF (set mounted in cube) \$2,130 In Stock

| Filter Role          | Filter Size                | Part Number                             | Price <sup>1</sup> |
|----------------------|----------------------------|---|--------------------|
| Single Band Exciter  | 25 mm x 5.0 mm             | <a href="#">FF01-448/20-25</a>          | \$355              |
| Single Band Exciter  | 25 mm x 5.0 mm             | <a href="#">FF01-514/3-25</a>           | \$355              |
| Single Band Exciter  | 25 mm x 5.0 mm             | <a href="#">FF01-563/9-25</a>           | \$305              |
| Triple Band Emitter  | 25 mm x 3.5 mm             | <a href="#">FF01-485/537/627-25</a>     | \$435              |
| Triple Band Dichroic | 25.2 mm x 35.6 mm x 1.1 mm | <a href="#">Di01-R442/514/561-25x36</a> | \$515              |
| U-MF2 cube           |                            | <a href="#">OMF</a>                     | \$435              |

#### Olympus U-FF for microscopes: BX53, BX63

LF442/514/561-3X-A-OFF (set mounted in cube) \$2,130 In Stock

| Filter Role          | Filter Size                | Part Number                             | Price <sup>1</sup> |
|----------------------|----------------------------|---|--------------------|
| Single Band Exciter  | 25 mm x 5.0 mm             | <a href="#">FF01-448/20-25</a>          | \$355              |
| Single Band Exciter  | 25 mm x 5.0 mm             | <a href="#">FF01-514/3-25</a>           | \$355              |
| Single Band Exciter  | 25 mm x 5.0 mm             | <a href="#">FF01-563/9-25</a>           | \$305              |
| Triple Band Emitter  | 25 mm x 3.5 mm             | <a href="#">FF01-485/537/627-25</a>     | \$435              |
| Triple Band Dichroic | 25.2 mm x 35.6 mm x 1.1 mm | <a href="#">Di01-R442/514/561-25x36</a> | \$515              |
| U-FF cube            |                            | <a href="#">OFF</a>                     | \$435              |

#### Zeiss FL Cube EC P+C for microscopes: Axio Imager, AxioStar Plus, Axioskop 40, Axioskop 2 (post-2001), AxioPlan 2i, AxioPlan 2ie, Axiovert 200, Axiovert 40, Axio Observer, Axio Examiner and Axio Scope A1

LF442/514/561-3X-A-ZHE (set mounted in cube) \$1,970 In Stock

| Filter Role          | Filter Size                | Part Number                             | Price <sup>1</sup> |
|----------------------|----------------------------|---|--------------------|
| Single Band Exciter  | 25 mm x 5.0 mm             | <a href="#">FF01-448/20-25</a>          | \$355              |
| Single Band Exciter  | 25 mm x 5.0 mm             | <a href="#">FF01-514/3-25</a>           | \$355              |
| Single Band Exciter  | 25 mm x 5.0 mm             | <a href="#">FF01-563/9-25</a>           | \$305              |
| Triple Band Emitter  | 25 mm x 3.5 mm             | <a href="#">FF01-485/537/627-25</a>     | \$435              |
| Triple Band Dichroic | 25.2 mm x 35.6 mm x 1.1 mm | <a href="#">Di01-R442/514/561-25x36</a> | \$515              |
| FL Cube EC P+C cube  |                            | <a href="#">ZHE</a>                     | \$275              |

#### Leica DM-K for microscopes: DM-2000, DM-2500, DM-3000, DMI3000 B, DM-4000, DMI4000 B, DM-5000, DM-5500, and DM-6000, DMI6000 B

LF442/514/561-3X-A-LDMK (set mounted in cube) \$2,045 Contact Us

| Filter Role         | Filter Size    | Part Number                    | Price <sup>1</sup> |
|---------------------|----------------|--------------------------------|--------------------|
| Single Band Exciter | 25 mm x 5.0 mm | <a href="#">FF01-448/20-25</a> | \$355              |
| Single Band Exciter | 25 mm x 5.0 mm | <a href="#">FF01-514/3-25</a>  | \$355              |
| Single Band Exciter | 25 mm x 5.0 mm | <a href="#">FF01-563/9-25</a>  | \$305              |



|                      |                            |   |       |
|----------------------|----------------------------|---|-------|
| Triple Band Emitter  | 23.3 mm x 2.0 mm           | <a href="#">FF01-485/537/627-23 3-D</a> | \$435 |
| Triple Band Dichroic | 22.0 mm x 29.0 mm x 1.1 mm | <a href="#">Di01-R442/514/561-22x29</a> | \$515 |
| DM-K cube            |                            | <a href="#">LDMK</a>                    | \$350 |

1) US domestic pricing only. If you are ordering from outside the US, please contact your nearest [regional distributor](#) for the correct list price.

### Optical Specifications

| Specification | Value  |
|---------------|--|
| Blocking      | BrightLine filters have blocking far exceeding OD 6 as needed to ensure a black background, even when using modern low-noise CCD cameras. The blocking is optimized for microscopy applications using our exclusive SpecMaker™ fluorescence filter design. |

### General Filter Specifications

| Specification            | Value  |
|--------------------------|--|
| Microscope Compatibility | BrightLine filters are available to fit Leica, Nikon, Olympus, Zeiss, and Apero microscopes.   |
| Optical Damage Rating    | Testing has proven to show no signs of degradation when exposed to at least 6.0 W of power from an unfiltered xenon arc lamp over a 25 mm diameter (corresponding to 1.2 W/cm <sup>2</sup> ) for over 500 hours. |

### Physical Filter Specifications

| Specification               | Value   |
|-----------------------------|---|
| Scratch-Dig                 | 60-40   |
| Exciter/Emitter Orientation | Arrow on ring indicates preferred direction of propagation of light.  |
| Dichroic Orientation        | "Reflective coating side" should face toward light source and sample. |

### Fluorophore Compatibility

★★★★ indicates this filter set was specifically optimized for this fluorophore.

★★★ indicates an excellent spectral match between fluorophore and filter set that should result in nearly ideal performance in most situations.

★★ indicates a good match between fluorophore and filter set, with actual performance dependent on other experimental conditions.

| Cyan        |               |
|-------------|---------------|
| Fluorophore | Compatibility |
| CFP (ECFP)  | ★★★★          |

★★★★ indicates this filter set was specifically optimized for this fluorophore.

★★★ indicates an excellent spectral match between fluorophore and filter set that should result in nearly ideal performance in most situations.

★★ indicates a good match between fluorophore and filter set, with actual performance dependent on other experimental conditions.

| Yellow           |               |
|------------------|---------------|
| Fluorophore      | Compatibility |
| YFP (yellow GFP) | ★★★★          |

★★★★ indicates this filter set was specifically optimized for this fluorophore.

★★★ indicates an excellent spectral match between fluorophore and filter set that should result in nearly ideal performance in most situations.

★★ indicates a good match between fluorophore and filter set, with actual performance dependent on other experimental conditions.

| Orange      |               |
|-------------|---------------|
| Fluorophore | Compatibility |
| mCherry     | ★★★★          |

### Technical Information

| Topic  | Description  |
|--|--|
| <a href="#">Laser-based Instrumentation</a>                      | An review of common of laser-based instrumentation, including solutions from Semrock and additional learning resources.  |
| <a href="#">Laser Scanning/Spinning Disk Confocal Microscopy</a> | An overview of confocal microscopy techniques and applications, including solutions from Semrock and additional learning resources.                                      |
| <a href="#">TIRF (Total Internal Reflection Fluorescence)</a>    | An overview of TIRF microscopy, including solutions from Semrock and additional learning resources.  |
| <a href="#">High Performance Microscopy</a>                      | An overview of high performance microscopy, including solutions from Semrock and additional learning resources.  |
| <a href="#">Spectral Modeling in Fluorescence Microscopy</a>     | Discusses various sources of noise in fluorescence microscopy and how to maximize signal-to-noise ratios using software, sample preparation and optical filter selection |
| <a href="#">Super-resolution Microscopy</a>                      | Discusses advancements in fluorescence microscopy techniques that allow users to break the diffraction limit and   |

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|--|---|
| <a href="#"><u>Super-resolution Microscopy</u></a>   | visualize resolution similar to that of an electron microscope  |
| <a href="#"><u>Optical Filters for Laser-based Fluorescence Microscopes</u></a>                                | Analysis of additional considerations that laser excitation imposes on traditional fluorescence microscopy filter selection with a focus on multiple-laser systems.   |
| <a href="#"><u>Perfecting TIRF Optics</u></a>  | Prashant Prabhat, PhD, and Turan Erdogan, PhD, Semrock Inc., BioOptics World, Jan/Feb 2009<br>Discusses additional considerations that laser excitation imposes on traditional fluorescence microscopy filter selection                                 |
| <a href="#"><u>New Optical Filters Improve High-Speed Multicolor Fluorescence Imaging</u></a>                  | Turan Erdogan, PhD, Semrock Inc., BioPhotonics, March 2006<br>Compares benefits and drawbacks of full multiband, pinkel and sedat filter sets for high-speed multicolor fluorescence imaging  |
| <a href="#"><u>Fluorescence Imaging: Optical filters optimize laser-based fluorescence imaging systems</u></a> | Prashant Prabhat, PhD, and Turan Erdogan, PhD, Semrock Inc., Laser Focus World, January 2010<br>Discusses additional considerations that laser excitation imposes on traditional fluorescence microscopy filter selection                               |
| <a href="#"><u>Bringing Super-resolution to Fluorescence Microscopy</u></a>                                    | Prashant Prabhat, PhD, and Turan Erdogan, PhD, Semrock Inc., BioPhotonics, May/June 2010<br>Advances in fluorescence microscopy techniques allow users to break the defraction limit and visualize resolution similar to that of an electron microscope |
| <a href="#"><u>Optical Filters for Laser-based Fluorescence Microscopes</u></a>                                | Discusses additional considerations that laser excitation imposes on traditional fluorescence microscopy filter selection   |
| <a href="#"><u>Multiband Filter Set Terminology</u></a>  | Compares benefits and drawbacks of full multiband, pinkel and sedat filter sets   |
| <a href="#"><u>Orientation of Filters in a Microscope</u></a>  | A guide to properly orienting Semrock filters based on the filter markings.   |
| <a href="#"><u>Introduction to Fluorescence Filters</u></a>  | Shows how optical filters are used in a traditional fluorescence microscope and describes important factors to consider when choosing optical filters.  |
| <a href="#"><u>Flatness of Dichroic Beamsplitters</u></a>  | Describes the impact of non-flat dichroic beamsplitters on microscope image fidelity  |
| <a href="#"><u>Filter Reliability</u></a>  | Compares the performance and reliability of hard coated filters to traditional soft-coated filters and provides information about the testing standards for Semrock filters   |
| <a href="#"><u>Cube Assembly Instructions</u></a>  | PDF and video instruction for installing filters into popular filter cubes  |
| <a href="#"><u>Cleaning Optical Filters</u></a>  | Instructions for cleaning hard coated optical filters   |