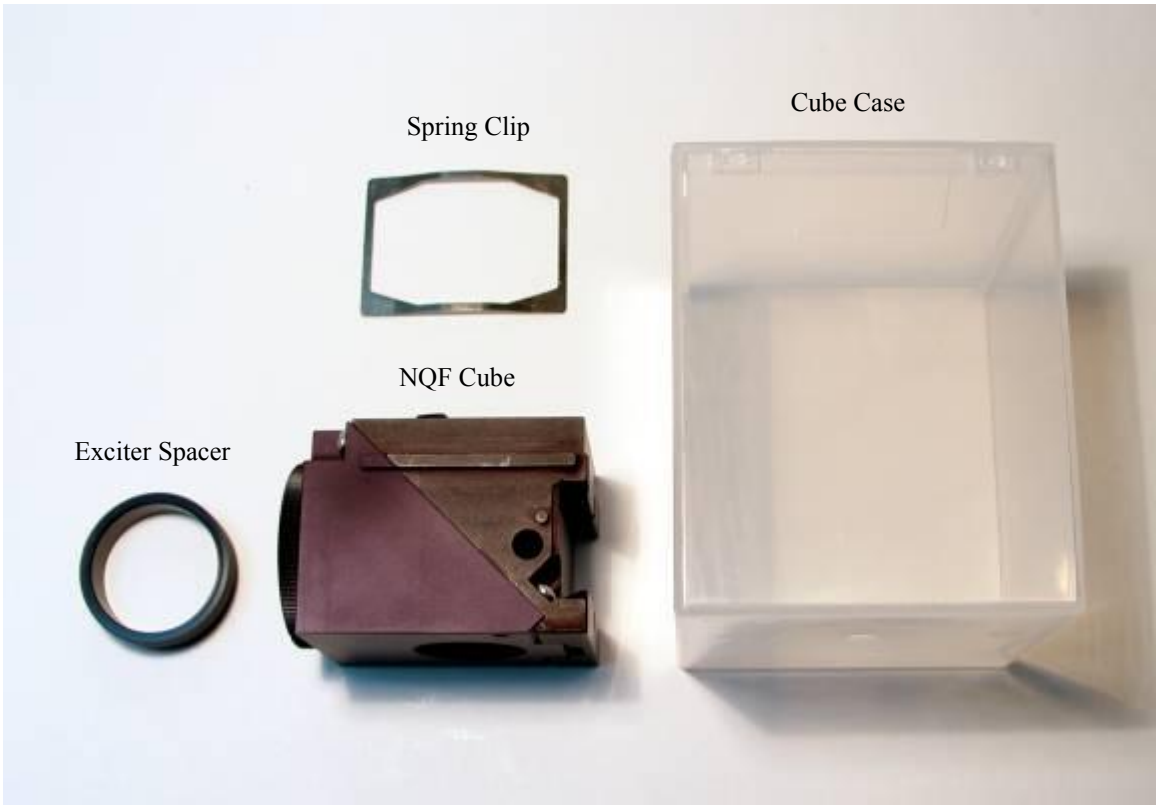
Assembling the Nikon Cube

A Quick How-to Guide for Nikon Cube Quadfluor

Semrock a Unit of IDEX

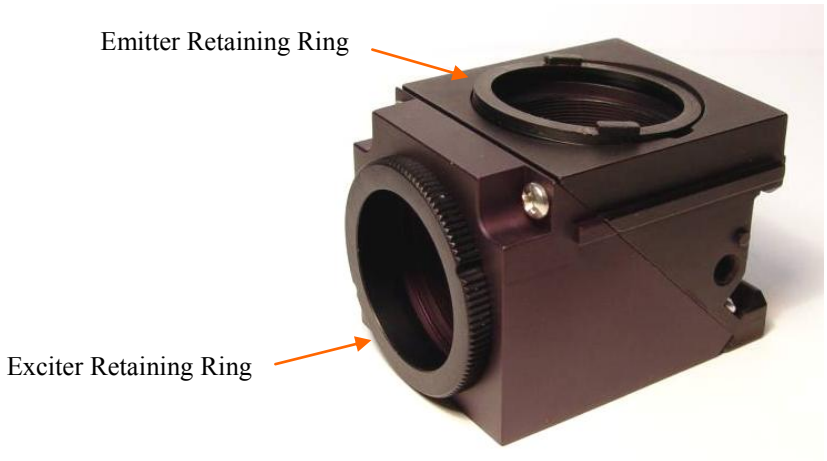
The Standard in Optical Filters for Biotech & Analytical Instrumentation

Nikon Quadfluor Cube Assembly and Semrock Cube Case



Semrock Filter Set –Exciter, Emitter and Dichroic

Note: The filter set shown is for reference only.

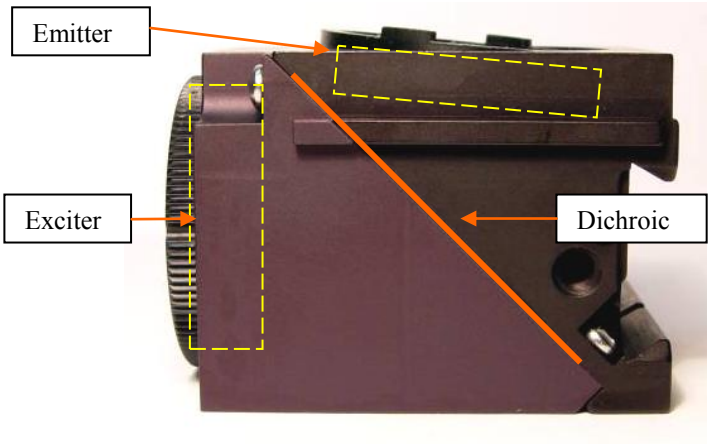
Step	Action
1.1.1	The NQF cube has two filter retaining rings. One is located on the Exciter side and one is on the Emitter side as shown below. 
1.1.2	Using your fingers, remove the Retaining Rings from the cube by carefully turning them outward. Note that the Exciter Retaining Ring is threaded and the Emitter Retaining Ring uses two small ears that twist lock into the cube housing. The rings are shown below for reference. Exciter Retaining Ring Emitter Retaining Ring 

Step	Action
1.2	**Install the Semrock Filter Set**
1.2.1	The diagram below illustrates a cross section of the Nikon NQF cube for use in orienting and installing the Exciter, Dichroic and Emitter filters into the cube assembly. The cross section is for reference only to illustrate filter position and orientation.

Filter Positions

The Emitter is located at the top of the cube assembly. Notice it is mounted at a slight angle.

The Exciter is located at the left side and the Dichroic is mounted diagonally at the center of the cube.



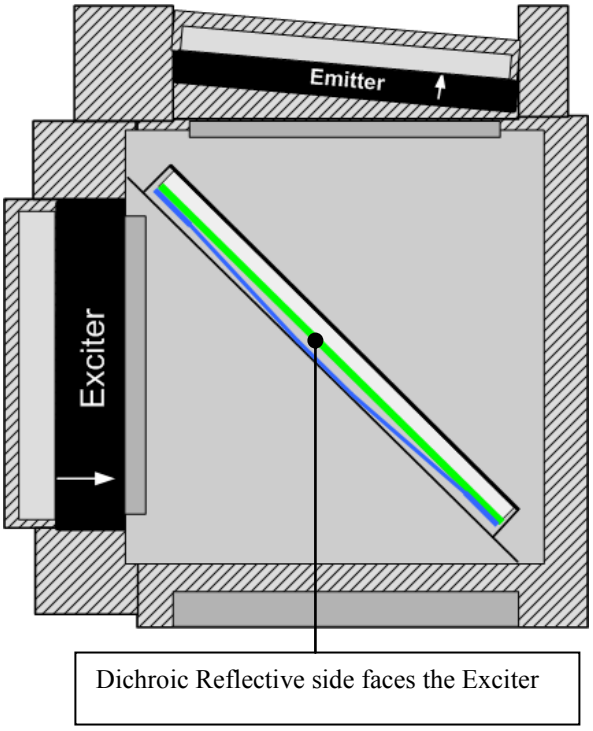
Filter Orientation

The filters are *oriented* in the assembly as follows:

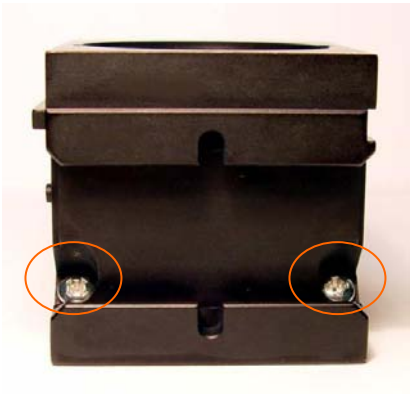
- The Exciter is mounted with its arrow pointing ***inward.***
- The Dichroic Reflective side is mounted facing the Exciter.
- The Emitter is mounted with its arrow pointing ***outward.***

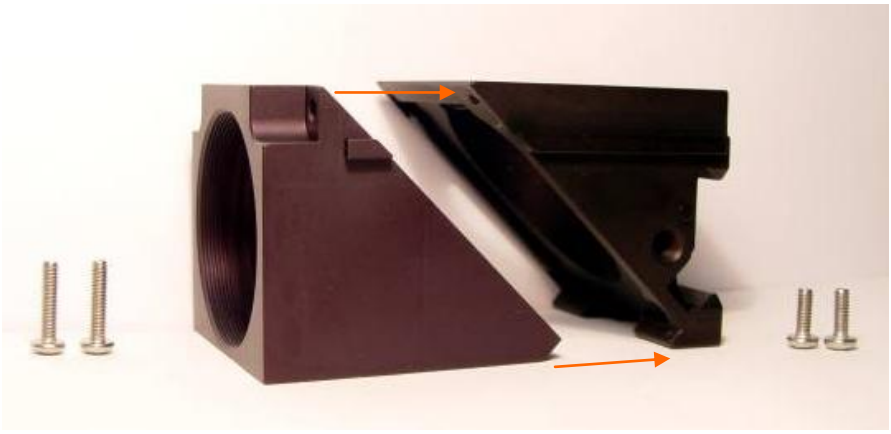
Light passes through the cube in the direction of the arrows.

Note: The Dichroic Reflective coating must face the Exciter as shown in the cross section diagram.



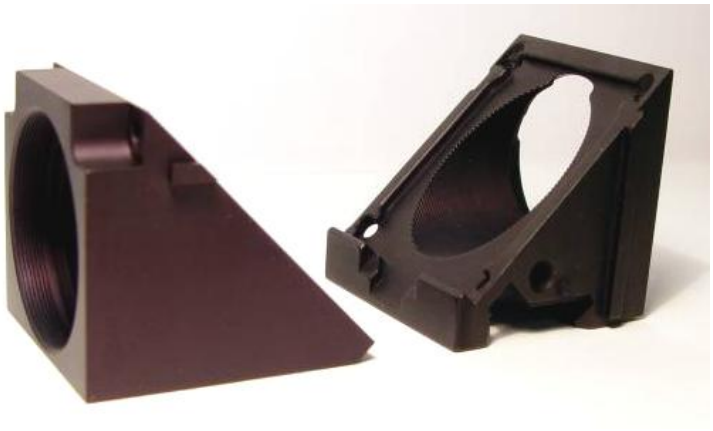
1.2.2	Separate the cube halves by removing four screws. Two long screws are located on the Exciter side and two short screws are at the back of the cube near its base.

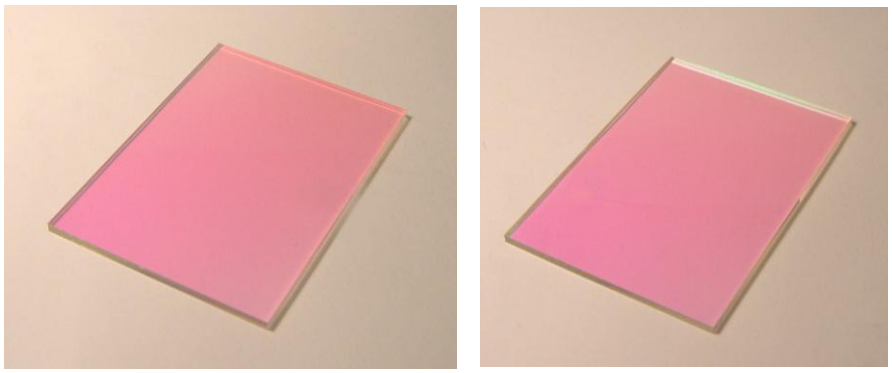
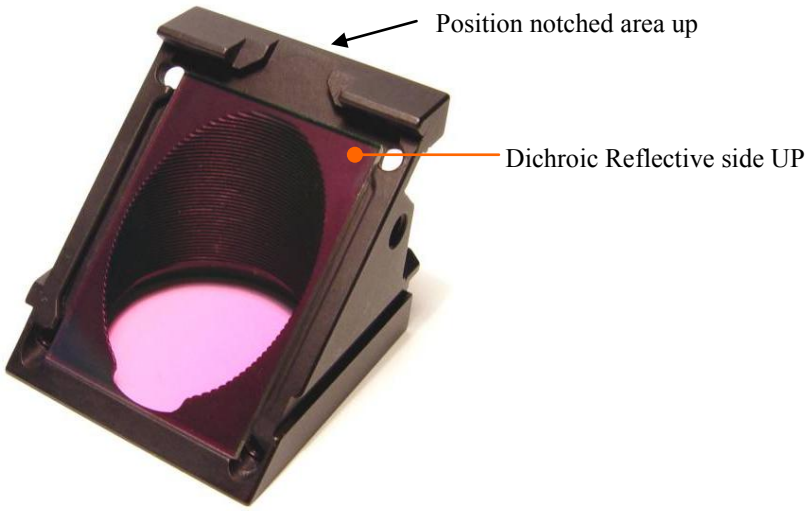


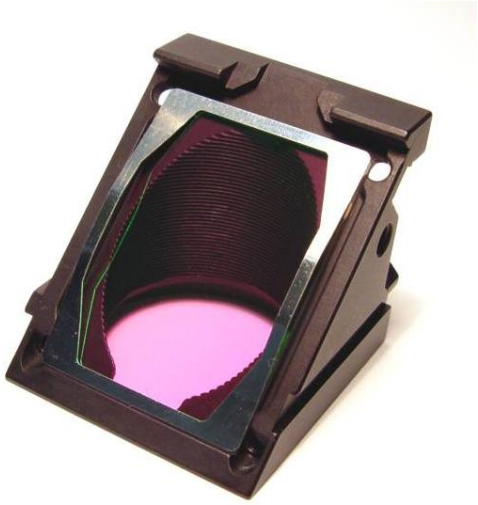
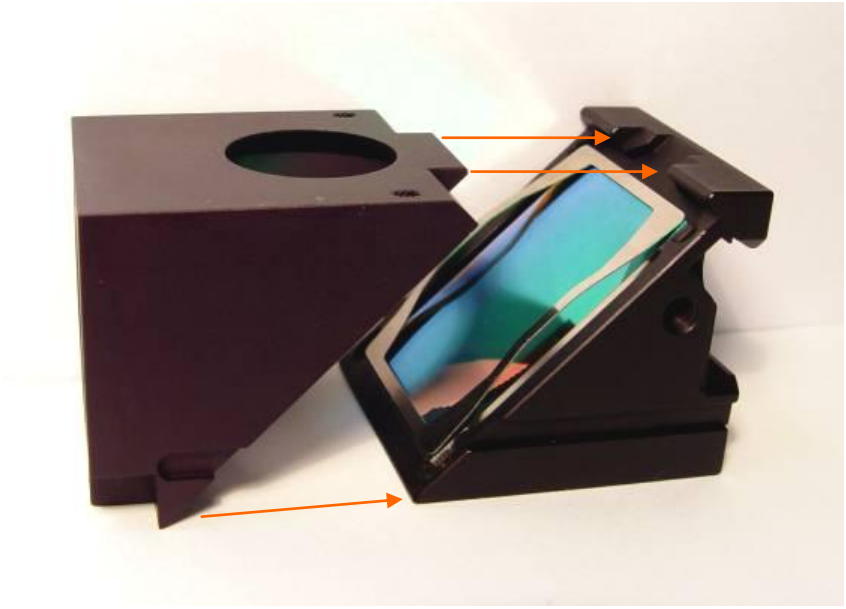


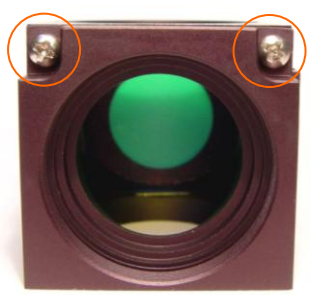
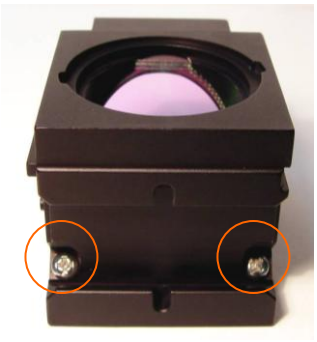
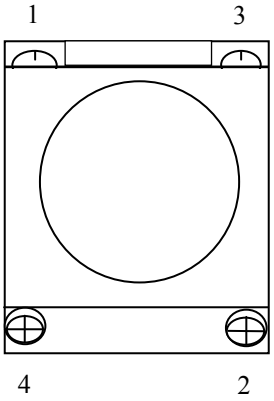
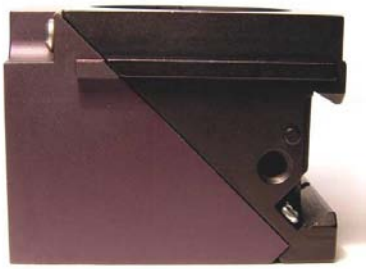
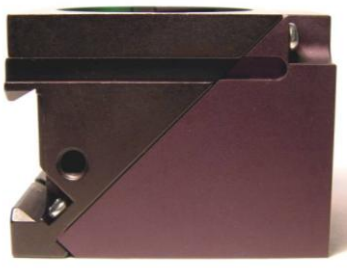
Exciter Housing

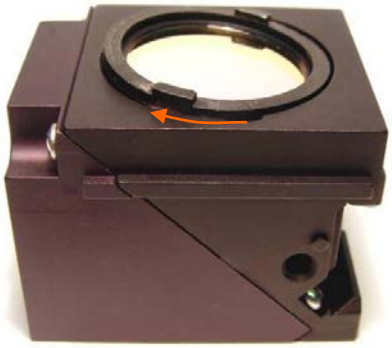
Emitter/Dichroic Housing

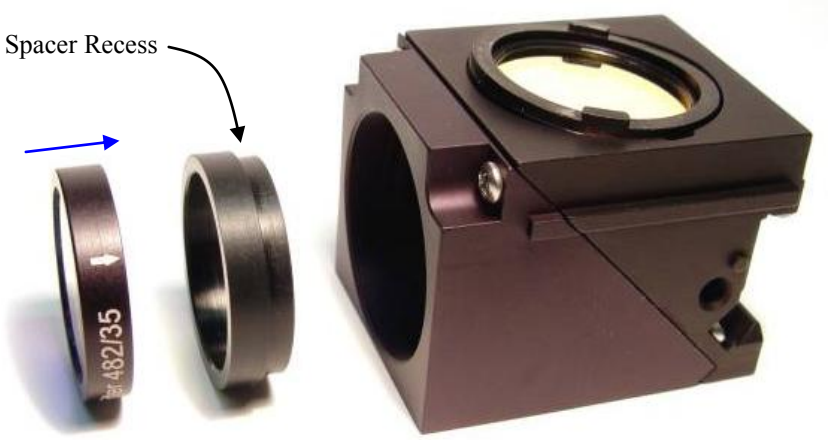
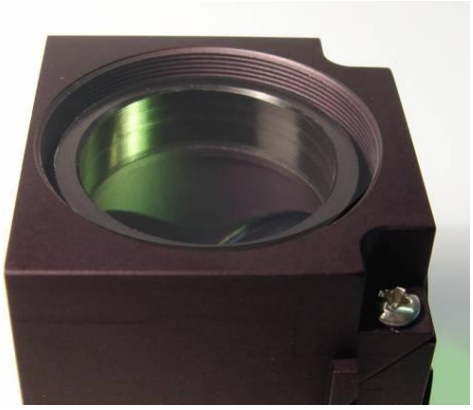


1.2.3	Reflective “Coated Side”: The filter edge is concealed by the reflective coating and appears colored all the way to the edge. Anti-Reflective “Uncoated Side”: The filter edge appears uncolored. **Reflective Side** **Anti-Reflective Side** 
1.2.4	Position the Emitter housing with the notched area upward. Center the Dichroic filter on the recessed diagonal mounting surface with the Reflective side **UP**. 

1.2.5	Place the Spring Clip over the Dichroic with the raised bend upward. Align the four corners of the Spring Clip with the corners of the Dichroic. Ensure that the Dichroic and Spring Clip do not cover the four screw holes at the corners of the housing. 
1.2.6	Align the notch on the Emitter housing with the tab on the Exciter half of the cube. Bring the cube halves together while keeping the Dichroic and spring clip centered in the recessed area of the Emitter housing. 

1.2.7	Fasten the cube halves together using the four screws removed previously. The two longer screws are used on the Exciter side and the two shorter screws are at the base of the cube on the Emitter side. Exciter Side (Long Phillips) Emitter Side (Short Phillips)   Alternately tighten the screws while keeping the Spring Clip and Dichroic centered in the recessed area of the Emitter housing. Alternately tighten the screws diagonally using the sequence 1 through 4 as shown to right.  **Note:** While tightening, keep all four screws loose enough to sense the alignment of the Dichroic. Once the cube halves and Dichroic are perfectly aligned, alternately snug each screw then further tighten to complete the assembly. The photos below show the cube halves in perfect alignment.  

1.2.8	Orient the Emitter with the arrow pointing away from the cube as shown below. 
1.2.9	Insert the Emitter filter into the Emitter housing with the arrow pointing up.  Insert the ears of the Emitter retaining ring into the slots of the housing. Turn the ring slightly to lock in place. 

1.2.10	From the supplied parts, locate the Exciter Spacer. Note that the Exciter Spacer has a recessed rim that faces inward during installation into the housing. The exciter filter is inserted over the spacer with its arrow pointing inward. The photo below illustrates the placement order and orientation of the spacer and Exciter filter for reference. 
1.2.11	Orient the cube with the Exciter mounting area facing upward as shown below. Insert the Exciter spacer into the cube housing with the recessed area inward. 

1.2.12	Place the Exciter filter inside the mounting area over the spacer with the arrow pointing in. 
1.2.13	Thread the Retaining Ring over the Exciter Filter. Carefully rotate the ring to avoid cross threading. If the ring will not turn, it is not threaded properly – slowly turn the ring out and try again. Do not force thread the ring as it will turn freely if oriented correctly.   Once snug, tighten slightly further to secure.

1.2.14	Completed Nikon NQF Cube Assembly.