

# Fluorescence Imaging



Fluorescence Imaging

- Utilizes interchangeable professional fluorescence cubes to create images compatible with most existing camera systems.
- Much lower cost and smaller (more compact) than a traditional microscope.
- Field of view up to 9.2 mm with a 2/3" CCD in macro mode.
- Micro mode utilizes professional infinity corrected objectives.
- Remote UV light source includes a long-life metal halide bulb.
- Zoom and fixed systems available. Fine focus included with both systems.

# ZFL Video Scope.....



## Navitar Video Fluorescent Scope

Navitar's Video ZFL Scope is a Macro/Micro fluorescent vision system that utilizes interchangeable professional fluorescent cubes and internal focus to create an image compatible with most existing camera systems. It is a simple means of doing very sophisticated, task oriented fluorescence without the expense and complexity associated with a fully loaded research microscope.

## Basic Components of Any Video Fluorescent System

1. A **light source** emitting the wavelengths required to cause the labeling dye to fluoresce.

Two different remote light sources are available, a halogen light for the longer wavelengths, and a metal arc lamp for the UV. LED illumination is currently under development.

2. An **integrated cube** that optimizes performance by stopping all but the desired (excitation) wavelength from reaching the object and then stopping all but the fluorescing wavelength (emitting) from reaching the camera. There is a multitude of off-the-shelf cubes available depending

## Ideal Uses

- Transgenic organisms.
- All GFP (Green Fluorescent Protein) studies involving living cells and tissues: C. Elegans, D. Melanogaster, D. Rerio Larva, Zebra Fish, Oocytes, Nematodes, Drosophila.
- Plant cells, plant surfaces, soil samples, parasites.
- Air and water pollution.
- Forensic - fingerprints, fibers, documents, and body fluids.
- Capillary flow.
- Bacteria on agricultural products.
- Art restoration.
- Other non-destructive testing.
- Wafer Contamination by organic residue.
- Inspection of photoresist.
- Diagnosis of lumber diseases.
- Inclusions, imperfections, and compound variation in geological crystals (including the gem industry).
- Inspection of the structure and chemical composition of concrete.
- Investigation of the presence and dispersions of additives or impurities in polymers and ceramics.
- Investigation of structural abnormalities in materials (cracks, pores, welds).
- Confirming presence of adhesives in cemented applications.

on which labeling dye is being used.

The Navitar system permits the usage of all standard Olympus BX2 Fluorescent Cubes, which are available from multiple sources. These are captured singularly in a quick change holder requiring only a minute to interchange. Information on filter sets and cubes can be found at [www.chroma.com](http://www.chroma.com).

3. A **camera** whose sensitivity and bandwidth are adequate to handle the fluorescing light levels (which can sometimes be minimal).

All other components are optics and mechanics that permit variation of the magnification (field of view) and resolution, along with a means of achieving critical focus.

The Navitar system is suitable for operation in either Macro or Micro mode.

#### Macro Mode

In the Macro mode, a fixed lens system provides up to a 9.2 mm diameter field of view at a 165 mm working distance with a 2/3" format camera. A 6.5X zoom accessory provides up to a 15 mm diameter field at a 108 mm working distance. Various lens attachments allow the working distance to change from 32 to 165 mm. An add-on focus accessory provides a means of adjusting focus without requiring a microscope type stand.

#### Micro Mode

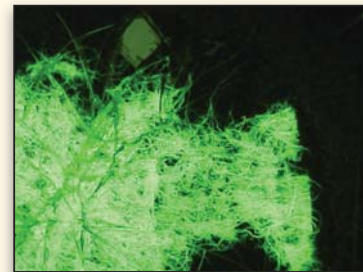
In the Micro mode, the same single lens system provides a 0.9X coupling of any standard 200 mm tube length, infinity corrected, fluorescent microscope objective to the camera.

#### Who is Using the Navitar Video ZFL Scope?

- OEM customers creating an automated system for scanning and post processing of proteomics.
- Production laboratory using image processing software to count and categorize selected images.
- High school or university professor, on a limited budget, who needs to demonstrate certain fluorescent characteristics to a group.
- A field operator who needs instant results involving agriculture, oceanography, or criminology.
- Museum or aquarium setting-up a public display.
- Research scientists in government laboratories.

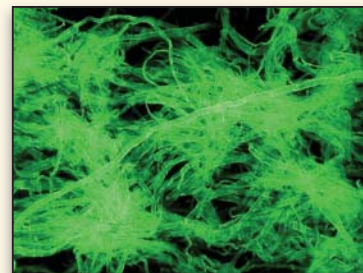


#### Cellulose Fiber Images in Macro and Micro Modes



##### Macro Mode

0.5X Lens Attachment  
Magnification\* = 0.9X, W.D. = 175



##### Micro Mode

4X Objective  
Magnification\* = 3.6X



##### Micro Mode

20X Objective  
Magnification\* = 18X

*\*Magnifications are at the image plane.*

# ZFL System Diagram

