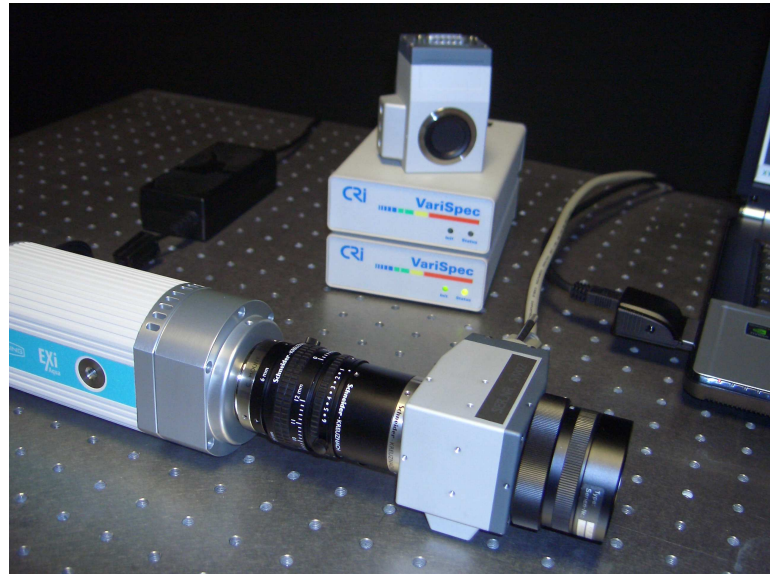


## LIQUID CRYSTAL TUNABLE FILTER-SYSTEM

The LCTF spectral imaging system consists of a combination of 2 different filters, a cooled scientific CCD camera and optics to get an image on the CCD sensor. The transmission of the filters can be controlled electronically by our own software as well as the camera control and data acquisition.

The results are full resolution pictures for different wavelength regions.

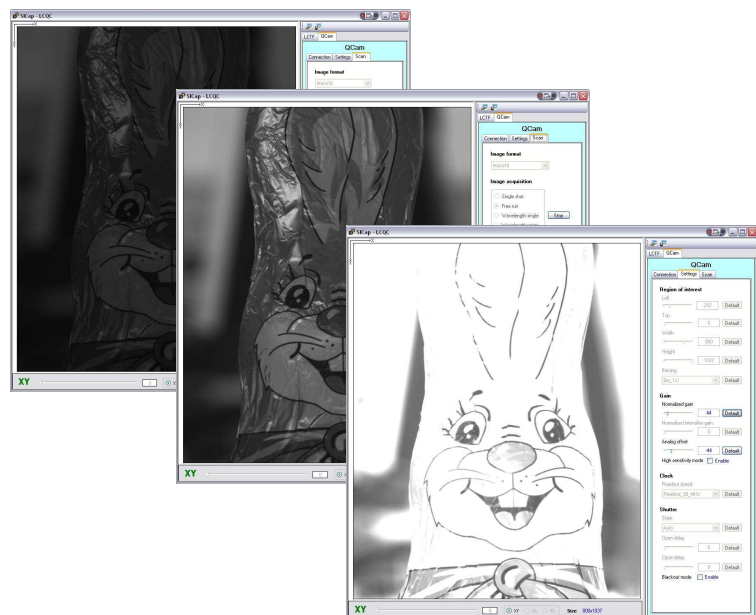


### Application examples

The LCTF is probably the most suitable tool for application in the fluorescence spectroscopy, the biomedical research, the non-destructive analyzing of quality / quality inspection and in the forensic analysis.

### Remote sensing e.g. in:

- agriculture,
- geology,
- military,
- produce and meat inspection,
- forensics,
- medical,
- ground truthing,
- target detection analysis



## Spectrometer Specifications:

<b>Features</b>	
# of cameras/LCTF	Up to 4 (2 pairs)
Imaging	Hyperspectral
Interface	Firewire
Exposure Time	10 $\mu$ s to 17.9min in 1 $\mu$ s increments
Image capture	Synchronized (camera and LCTF)
Frame rate (max; full frame)	10.0 fps
Max frame rate	110 fps with 8x8 binning & ROI
Gain, offset	Each camera separately set
Exposure	Each LCTF band separately set
<b>Detector (example)</b>	
Detector resolution, pixel size	1,392 x 1,040, 6.45 $\mu$ m
Detector type	CCD
Dynamic range	12 bits
CCD type	Monochrome
Power Requirements	13W (cooled); 8-24V (camera)
<b>LCTF</b>	
Position	Between optics and CCD (relay optics included)
Spectral bands	Varies depending on LCTF <b>VIS:</b> 400—720 nm (7, 10, or 20nm FWHM) <b>VISR:</b> 500—720 nm (0.25nm FWHM) <b>SNIR:</b> 650—1100 nm (7 or 10nm FWHM) <b>NIRR:</b> 650—1100 nm (0.75nm FWHM) <b>LNIR:</b> 850—1800 nm (6 or 20nm FWHM) <b>XNIR:</b> 1200—2450 nm (7nm FWHM)
Power Requirements	Provided by host computer's USB port
<b>Optics</b>	
Relay assembly to prevent vignetting at wide field of view	
Front apochromatic lens selectable from 4.8mm to 70mm	
C-mount front lens	
Adapters available for telescopes and microscopes	
<b>Software (see manual)</b>	
Full control and synchronization of camera & LCTF	
Auto-exposure	
Bands & exposure preselection	
Preview mode	
<b>Mechanical</b>	
Sensor mount	Top or bottom, 1/4" -20 mount

