FigSpec®

Microscopic Hyperspectral Imaging System

Any point spectrum

400-1000NM
Hyperspectral imaging

single spectrum imaging

Features

- Combining the advantages of microscope and imaging spectrometer, hyperspectral data acquisition of microscopic images can be performed at any time.

- It can transform existing biological microscopes, fluorescence microscopes, stereo microscopes, metallographic microscopes, etc., and easily transform ordinary microscopes into hyperspectral microscopes.

- Customers can customize microscope models according to their needs.

- The FigSpec® series of imaging spectrometers integrate a visual camera and a hyperspectral camera internally. The visual camera can be used to quickly preview the sampled images, and the hyperspectral image data collection can be performed after confirming that the images meet the requirements.

System composition

Hyperspectral imaging spectroscopic camera (optional FS-20/FS-22/FS-23)*1， Lens*1，
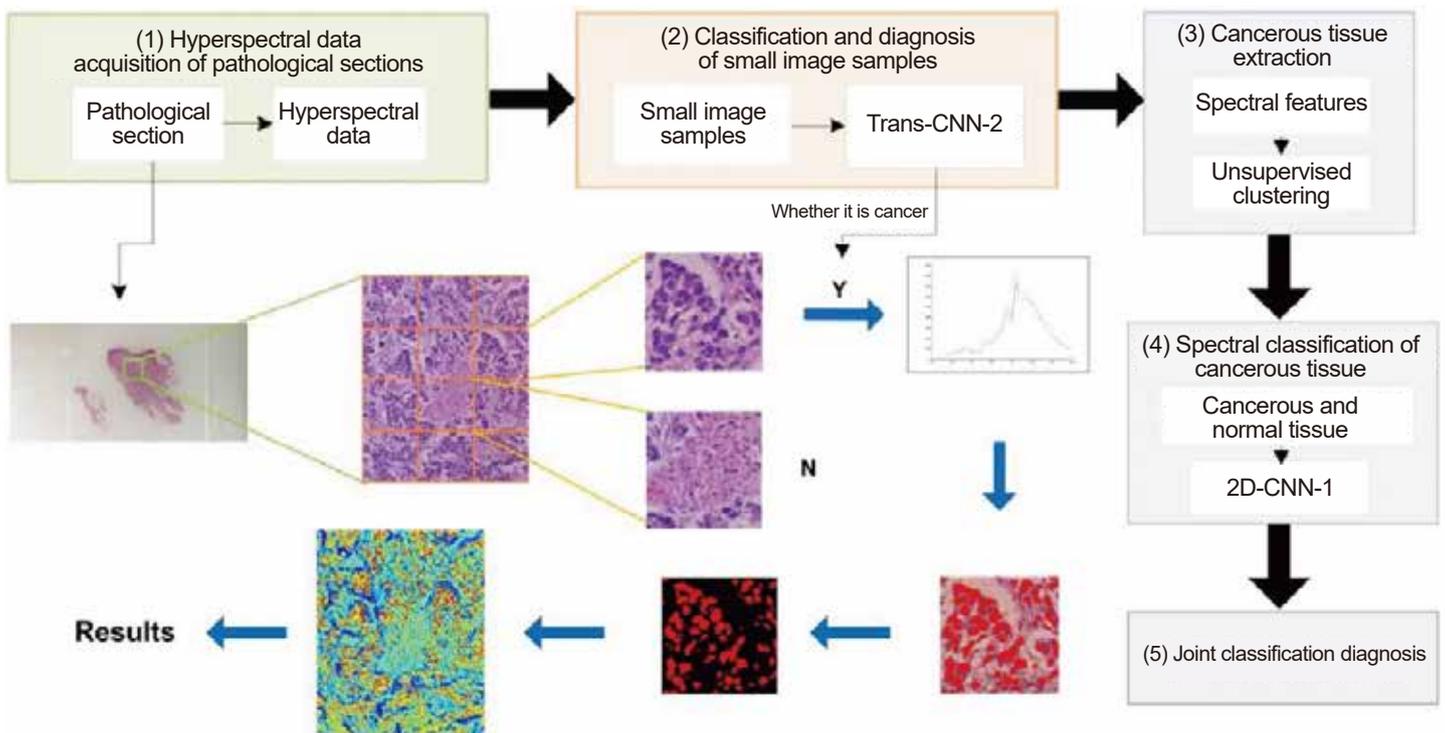Microscope (any manufacturer's model can be specified)*1， PC application software*1

Applications

Example 1: Hyperspectral detection of gastric cancer tissue
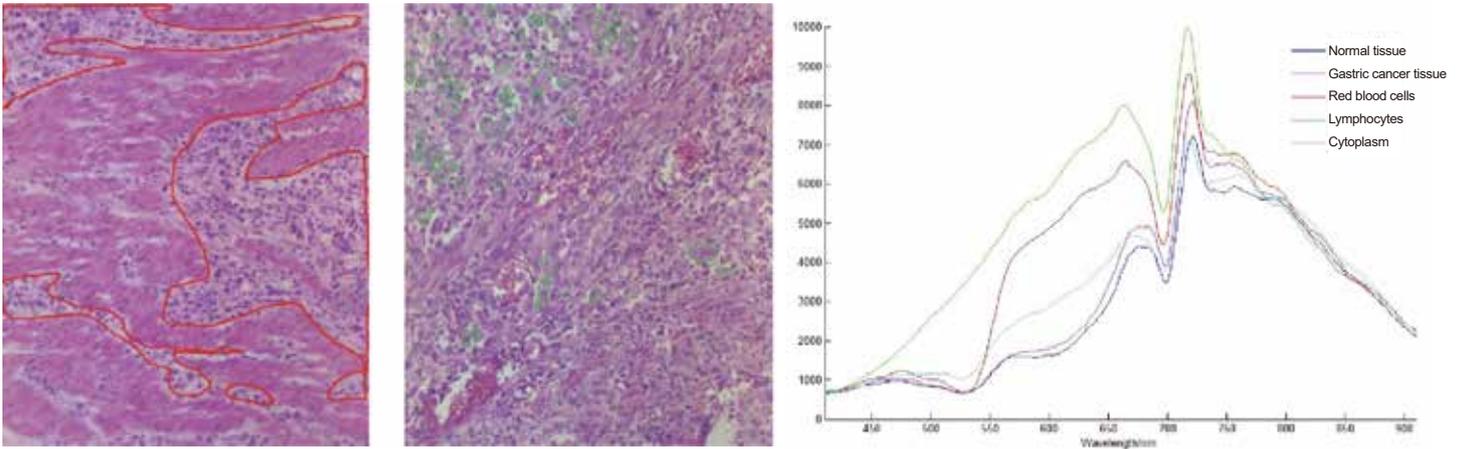
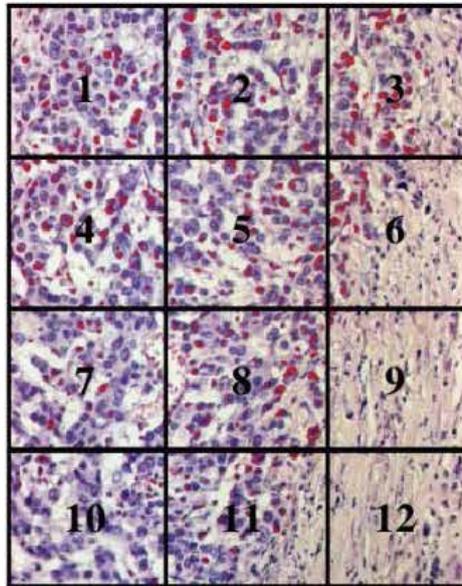△Gastric cancer tissue markers and gastric cancer cell markers

△Comparison of spectral derivatives between gastric cancer tissue and normal tissue

△Study on the diagnostic method of atlas combined with gastric cancer

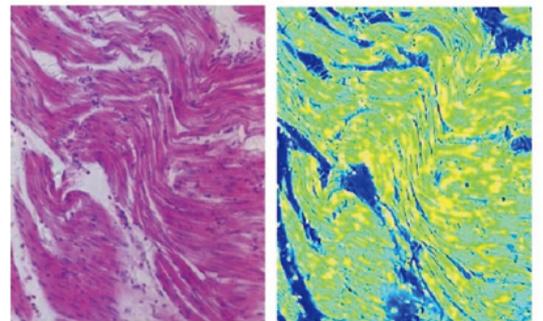△Small image classification △Spectral classification results △Joint classification results
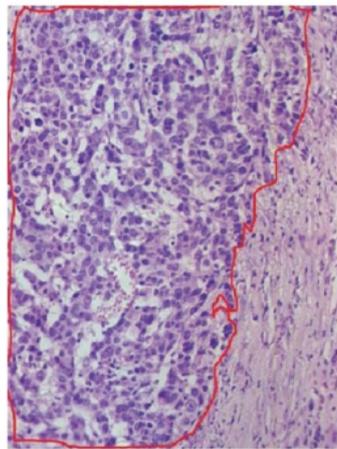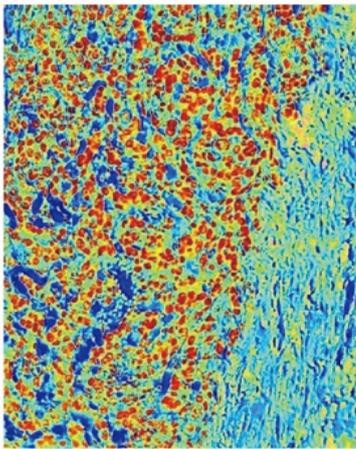
Comparison of classification results with doctor-marked areas
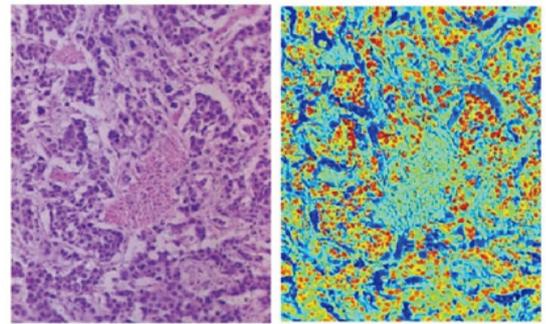
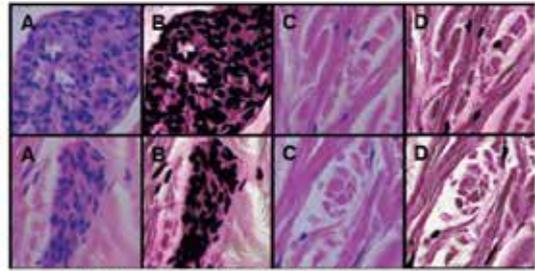
Undifferentiated adenocarcinoma tissue

Normal tissue

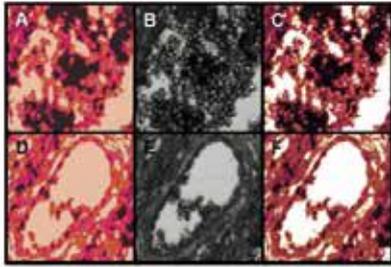△Study on the diagnostic method of atlas combined with gastric cancer

Example 2: Virtual staining of pathological sections based on hyperspectral technology
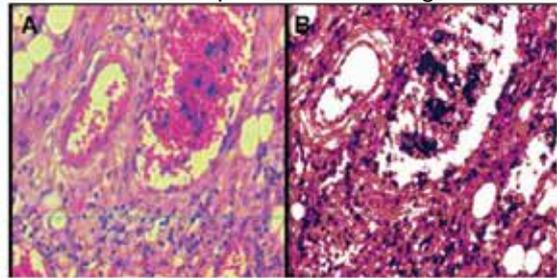

Hyperspectral pseudocolor images of unstained sections

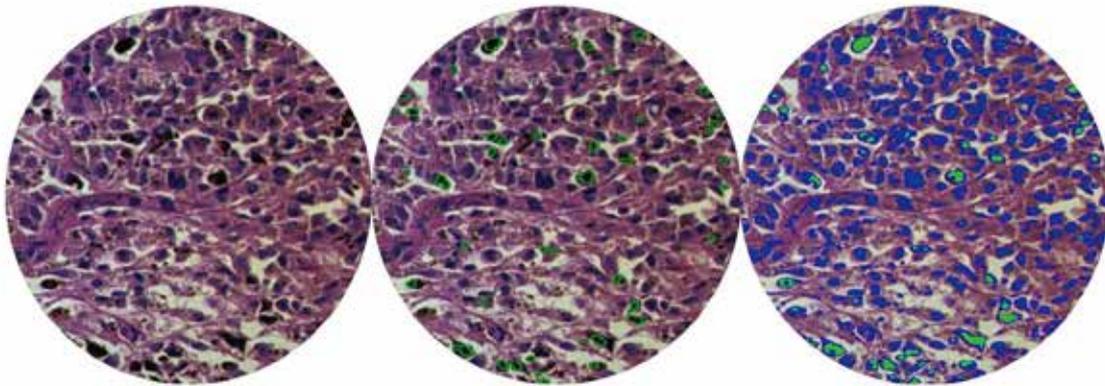Hyperspectral virtual staining results for unsupervised clustering

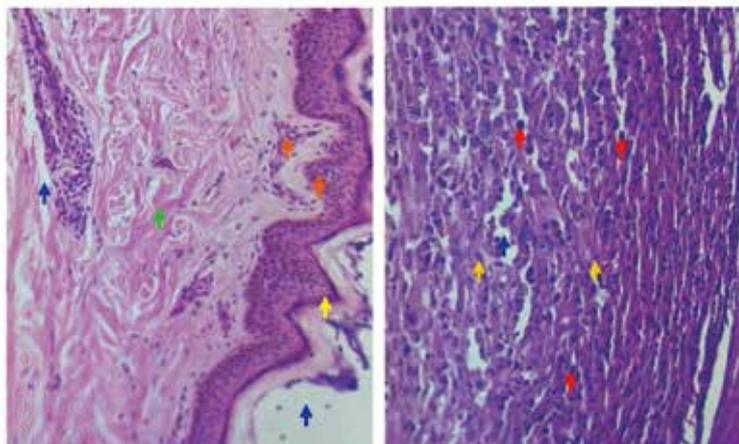Hyperspectral virtual staining results of unsupervised clustering combined but spectral images

Comparison of hyperspectral virtual staining results and H-E staining

Example 3: Skin melanoma identification based on microscopic hyperspectral imaging
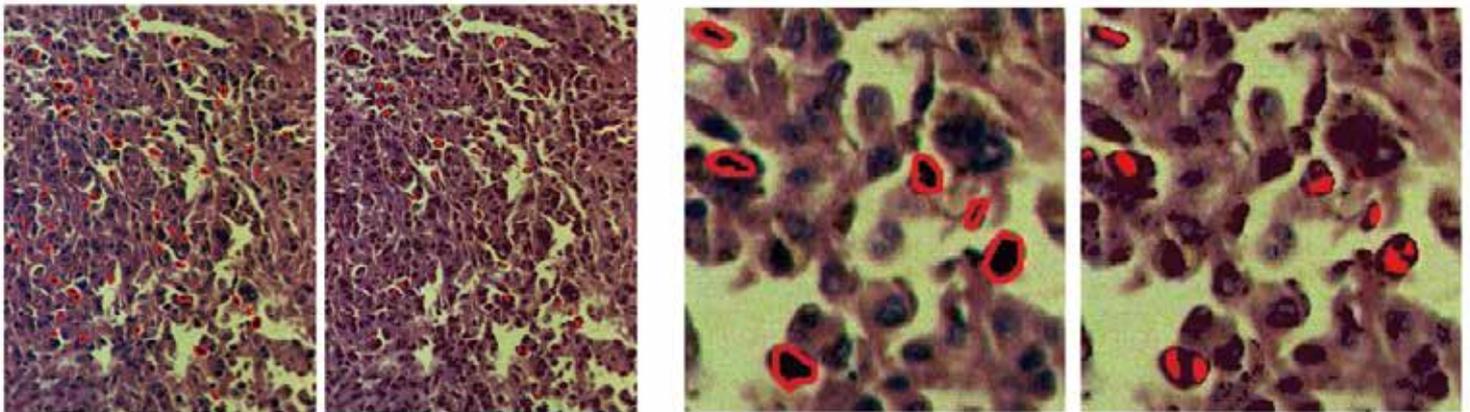

△Microscopic hyperspectral image and labeling of melanoma

△Schematic diagram of normal skin tissue and skin melanoma tissue
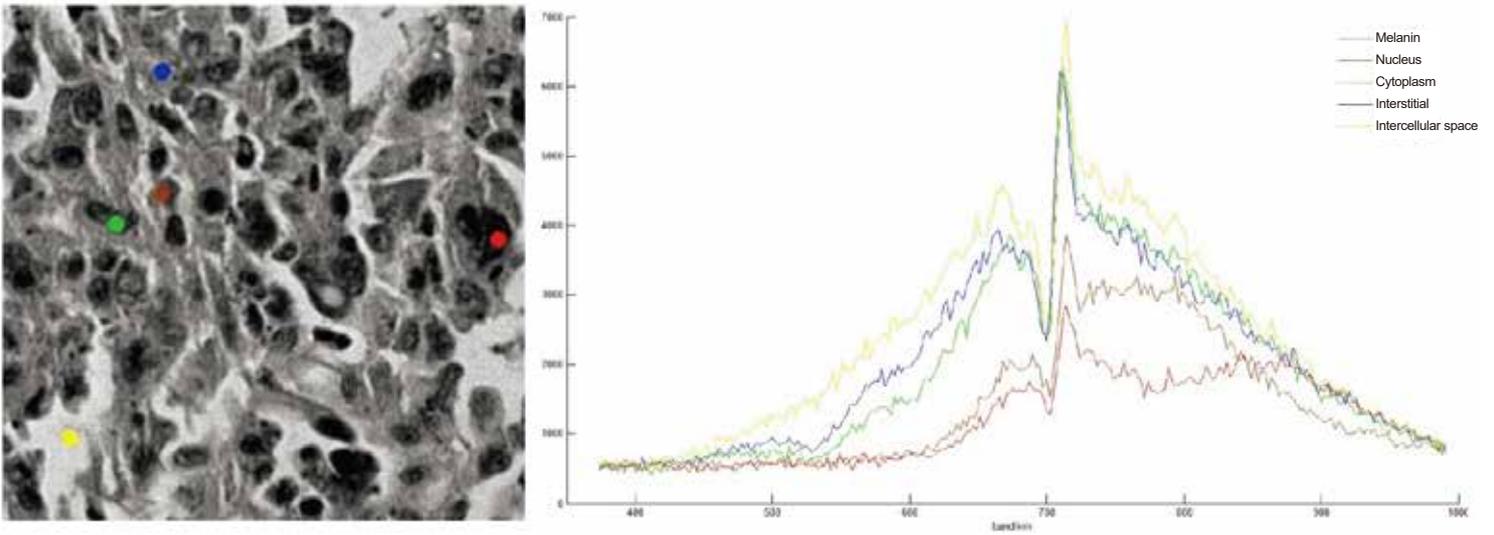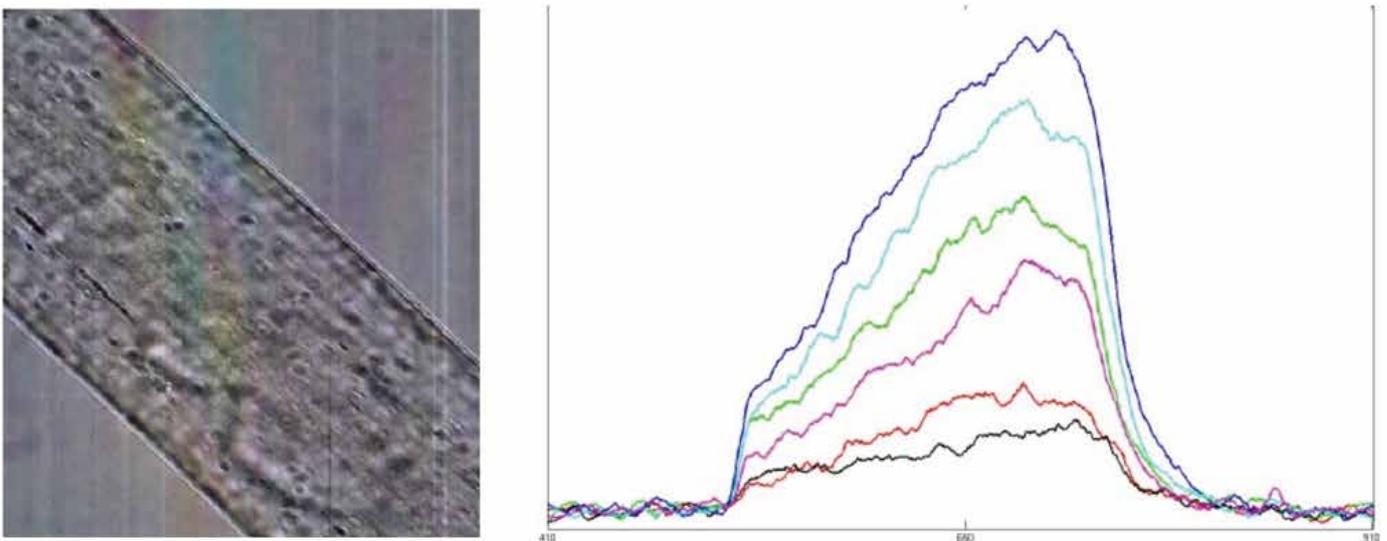
△Acquired hyperspectral images (400-1000nm)

△Malignant melanocyte classification results

Example 4: Judgment of panda age and health status by giant panda hair spectrum

△Microscopic image and spectrum of giant panda hair (400-1000nm)

Technical parameter

Model	FS-20	FS-22	FS-23
Lighting method	Passive lighting (without light source)	Passive lighting (without light source)	Passive lighting (without light source)
Spectroscopic method	Grating	Grating	Grating
Spectral range	400-1000nm	400-1000nm	400-1000nm
Spectral band	300	300	300
Spectral resolution	2.5nm	2.5nm	2.5nm
Slit width	25μm	25μm	25μm
Detector raw pixel count	1920*1200	1920*1200	1920*1200
Sensor target size	11.3mm*7.1mm	11.3mm*7.1mm	11.3mm*7.1mm
Imaging speed*	60s(x1),30s(x2),15s(x4)	20s(x1),10s(x2),5s(x4)	48s(x1),24s(x2),12s(x4)
Detector	CMOS	CMOS	CMOS
Field of view(FOV)**	25.4°（f=25mm）	25.4°（f=25mm）	12.8°（f=50mm）
Instantaneous field of view	1.0mrad（f=25mm lens）	1.0mrad（f=25mm lens）	0.5mrad（f=50mm lens）
Scan range	>30°	>30°	>32°
Image Resolution	1920*2400	1920*2400	1920*6000
Camera output bit depth	12 bits	12 bits	12 bits
ROI	Support for a single region	Support for multiple regions	Support for multiple regions
Interface	GIGE(Gigabit network)	USB3.0	USB3.0
Focus method	Manual focus	Manual focus	Auto focus
Overall size	263*178*120mm	263*178*120mm	263*178*120mm
Total Weight	Less than 4.5KG	Less than 4.5KG	Less than 4.5KG

* x1:1920，x2:960，x4:480

** Different focal length lenses can be customized