HAMAMATSU PHOTONICS

Photon is our business

Systems **Life Science**

Image Acquisition Software
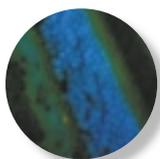
Wasabi!

Imaging Software

for
ORCA
ORCA ER
ORCA II
ORCA II ER
ORCA HR
ORCA BT
ORCA SC
C7780

Acquiring and Processing Images with Digital CCD Cameras

Digital CCD Cameras require software to control the camera and acquire images. A simple, reliable software package that provides easy setup, image acquisition, and evaluation is an essential part of every camera. All Hamamatsu ORCA series cameras, and a few related cameras, include our **Wasabi!** program to meet this requirement.

Focused on life science applications, **Wasabi!** is a software package built on the latest technology, featuring modular software design.

First a camera driver is developed for each camera model. This driver supports all the features of the particular camera. Binning, subarray, analog and digital contrast enhancement, and fast frame rate can all be confirmed and tested. Image acquisition by manual or auto exposure methods and even automatic white balance for color cameras is built in.

Next, the camera driver is plugged into an image processing software environment to create the **Wasabi!** program. The image processing environment includes all the functions used for standard image processing tasks such as contrast enhancement (both manual and automatic), filtering, image overlay, and accurate spectral color assignment of fluorescent images. Simple image analysis and statistics functions are included in the program. Data can be exported for documentation and used to optimize camera performance.

In addition to **Wasabi!**, Hamamatsu cameras are supported by a number of major software producers who produce complete, user-friendly solutions for advanced applications.

- Easy to use
- 100% camera performance
  (full resolution, full dynamic range)
- Fast image processing
- Suitable for most microscopy applications
- Various ORCA type cameras are supported

Wasabi! Software

The **Wasabi!** software is an easy to use stand-alone software for image acquisition and image processing of black and white as well as color images.

In combination with a camera plug in, images can be acquired, all functions commonly required to process images are available.

Image overlay and correction of image registration can be automated to meet the needs of each experiment. Black and white images can be colorized with virtually any color ("tinting") to match any commonly used fluorochrome.

Image contrast can be manipulated within a wide range and automatic contrast enhancement is included as well.

Analytical functions include both point and area analysis functions. Measurement of area, intensity and statistical properties of the images provide data necessary to establish optimal camera operations. All functions are designed to maintain the full image quality from the camera including the dynamic range and spatial resolution.
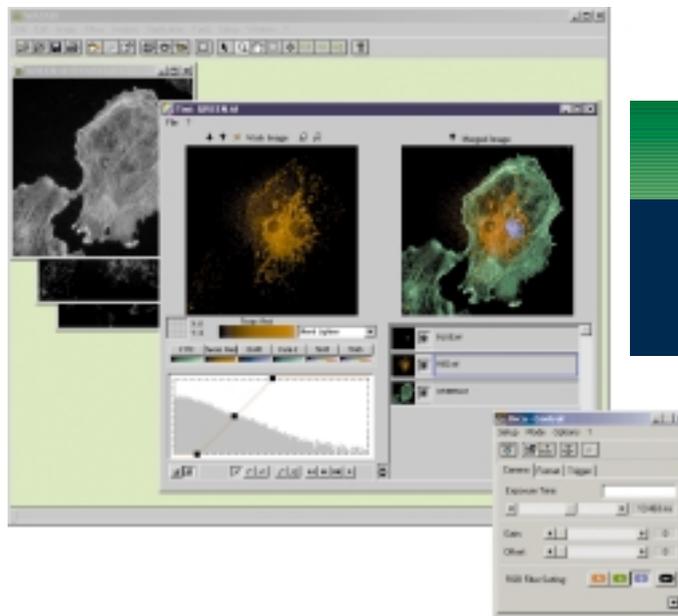
- Image acquisition including preview
- Manual and automatic contrast enhancement
- Smart image overlay functions including registration correction
- Area intensity analysis

Camera Modules

Wasabi! supports numerous Hamamatsu cameras with individual modules. Each camera module reflects the special features of the camera and supports automated parameter setting wherever possible (e.g. automatic exposure control). This offers easy image acquisition for new users or simple applications and complete manual control for more experienced users or more demanding applications.

A special Focus mode of operation offers high frame rates for fast, convenient optical adjustments.

- Automatic or manual exposure time control
- Focus mode for image preview with high frame rate
- Subarray and binning modes supported
- External trigger modes supported
- White balancing (with color cameras only)

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Technical Information

1. Cameras and Interfaces

The following cameras are supported by **Wasabi!**

(Note: Additional camera driver modules are continuously being developed. If you do not find your camera listed, please contact your local sales office.)

Camera version	RS 422 interface	RS 644 interface	IEEE1394 (Fire Wire) interface
C4742-95-12NR/NRG (ORCA)	●		●
C4742-95-12ER/ERG (ORCA ER)	●		●
C4742-98-1x (ORCA II)	●		
C4742-98-1xER (ORCA II ER)	●		●
C4742-95-12HR (ORCA HR)		●	
C4742-98-1xK/H (ORCA BT)	●		
C8000-10		●	
C8484	●		●
ORCA SC color camera	●		
C7780-10 color camera		●	

Peripheral devices

RBG filter system from CRI allows color image acquisition with a b/w camera.

Trigger input/ trigger output to interface with external equipment.

- ● Use a CRI filter system for acquisition of true color
- ● Trigger signal for external devices is possible

2. Computer and Peripherals

Recommended configuration: PC with 256 MB RAM, 19" monitor, Windows 98SE, ME, Windows 2000, Windows XP.

For cameras with RS422 or RS644 interface a Coreco PCDIG frame grabber is required.

(Note: SDKs are available for software developers who want to develop their own camera interface software.)
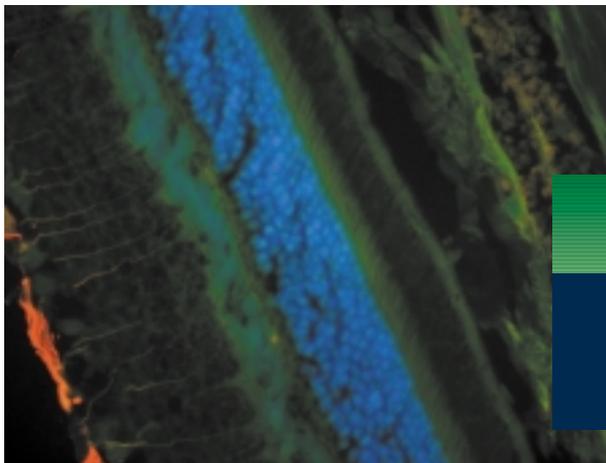
Application example:

- ● Rat Retina triple labeled with GFAP-- Cy3, S-100-- FITC, DAPI
- ● Image acquired with the C7780 3CCD color camera,
- ● Courtesy of Ward Peterson
- ● Inspire Pharmaceuticals, Durham, NC

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