

# How to install ZEN lite 2012

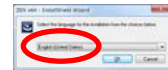
(For 32bit OS users please use ZEN 2009 lite edition.)

The latest version has a problem.

If you need ZEN2012 software please copy in the Central Research Laboratory.

Doubleclick the installer.

Select **Yes** when the **user account control** message displayed.



Select language for **English** and click **OK**.

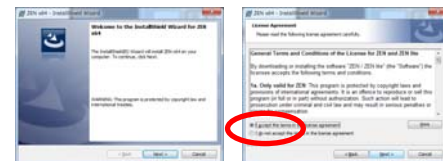
If the Framework message is displayed, click the Install.

Click **Next** when the ZEN installer starts up

On the license agreement screen, select **accept** and click **Next**.

Do not change the installation location and click **Next**.

Enter your user name and click **Next**.



Select the required program and click **Next**.

(You usually do not have to change it.)

<Contents>

ZEN2012(blue)...32bit program (Not required)

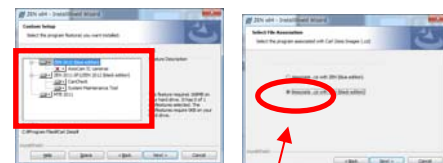
AxioCam IC cameras...Camera control (**unnecessary**)

**ZEN2012(black)...64bit program (required)**

CanCheck...Check program (**unnecessary**)

System Maintenance Tool...for service (**unnecessary**)

MTB2011...Microscope setting program (**unnecessary**)



important

Select **black edition** in association setting and click **Next**.

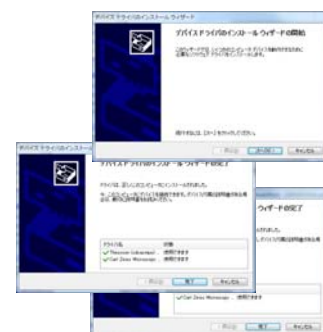
Click **Install**.

When the installation window of the device driver displayed, click **Next**.

(It will be displayed more than once)

Click **No** for the camera driver.

When the driver installation screen is displayed, click **Install**.



Click **Finish** when installation is completed.

When the installation is completed you will see ZEN icon on the desktop.

There are blue and black icons, so **use black icons**.



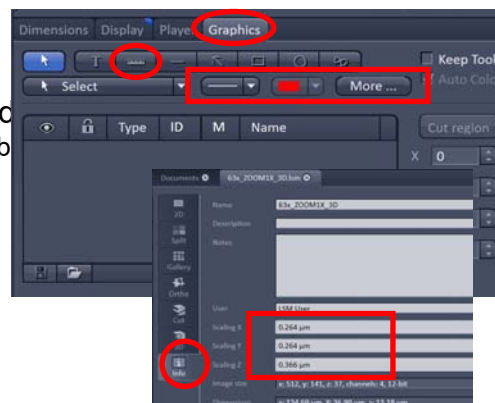
# Frequently used function 1

※パラメータの説明はマニュアル後半を参照して下さい。

## How to insert a scale bar

Click the **Graphics** tab at the bottom of the image window.  
Click the **scale bar icon**. Drag on the image.  
To arrange the scale bar, use the line type, color pull down, and  
(If you do not see these, check **Show all** on the right side of the Graphics tab)

If the scale bar can not be drawn, check the value of **Scaling X** in Info tab.



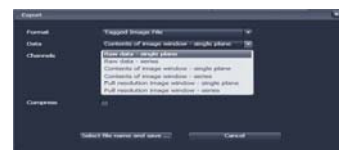
## How to convert to TIFF, JPEG

The image of the image window is displayed in the state you want to save.  
(Ex... Insert scale bar , Split display...)

File - Export **※Don't use "File - Save as"**

Format... Tagged image file(TIFF) , JPEG File

Data... (for single plane image) Contents of image window - **single plane**  
(for stack image) Contents of image window - **series**



\*When using images for measurement, please use **Raw data**.

\*If you are concerned about image quality degradation, please use Full resolution.

When Full resolution is used, characters on the scale bar become smaller, so please readjust.

If there is compression setting, specify Compression ratio.

(The smaller the higher the compression)

Click Select file name and save to save.

## How to create a projection image

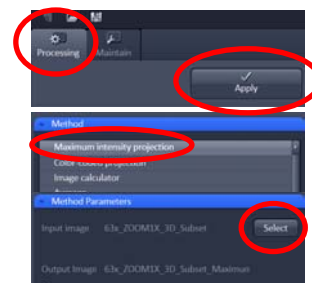
Open the Z stack image.

Click **Processing** tab.

Select **Maximum intensity projection** in Method menu.

Click **Select** button.

Click the **Apply** button to create a projection image in a new window.



## How to create a 3D image

※細かいパラメータの説明等は後記の3Dタブの説明部分を参照して下さい。

Open the Z stack image.

Click the **3D** button in the image window.

Click the **3D** tab at the bottom of the image window.

Select Maximum or Transparent as the representation method.

Adjust the parameters of the Appearance tab and adjust the state of the image.

Drag the 3D image and change the angle.

Click **Series** tab.

Select the axes you want to move with Render series.

Select Total frames from the numbers on the right.

(The one with more numbers moves smoothly)

Click **Panorama** button.

Set First angle to 0.

Click **Apply** to create a rotated image in a new window.



## Frequently used function 2

※パラメータの説明はマニュアル後半を参照して下さい。

### How to convert to movie file

Make cross-section animation...Open the Z Stack file.

Make animation of rotation image...Create the rotation image.

File - Export

Format...Video for Windows or Apple Quick Time

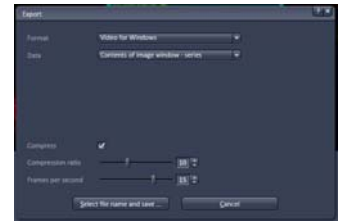
Data...Contents of image window – **series**

Compress...Check if you want to compress

Compression Ratio...The smaller the higher the compression

Frame per second...Set the video frame rate

Click Select file name and save to save.

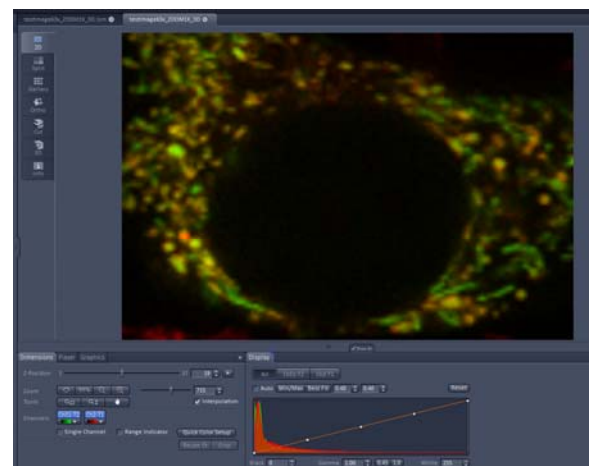
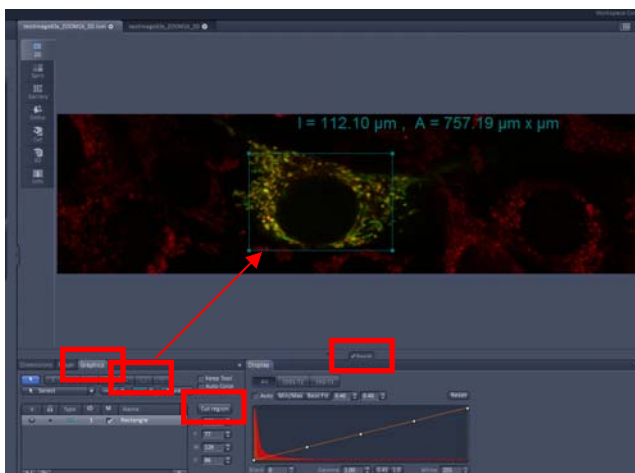


### Partial extraction(2D)

Check Show All.

Select the place you want to extract with the rectangle tool in the Graphics tab.

Clicking on the cut region displays the extracted image in the new window.



### Partial extraction(Z stack)

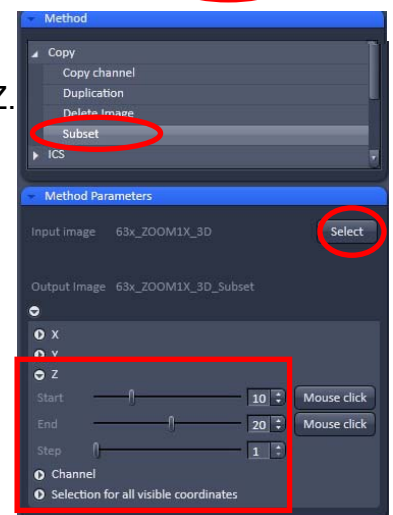
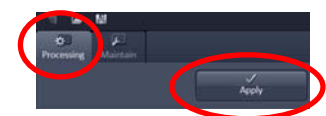
Open the image.

Click the Processing tab. Select Copy-Subset in Method menu.

Click Select button.

Specify the range you want to **keep** with Start and End of the item of Z.  
(Move the Z position on the 2D tab and check it)

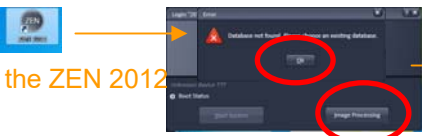
Click Apply to create the extracted image in the new window.



# How to use ZEN Lite 2012

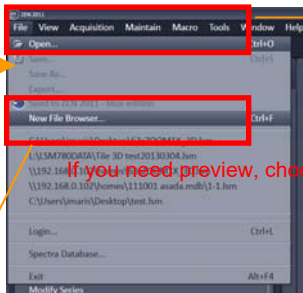
The function of the red character is often used.  
I do not use the function of gray characters much.

Open the ZEN 2012

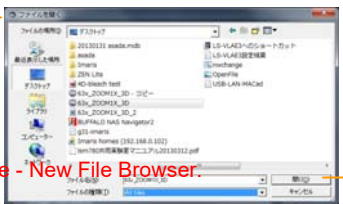


Click **OK** button.  
Click **Image Processing**.

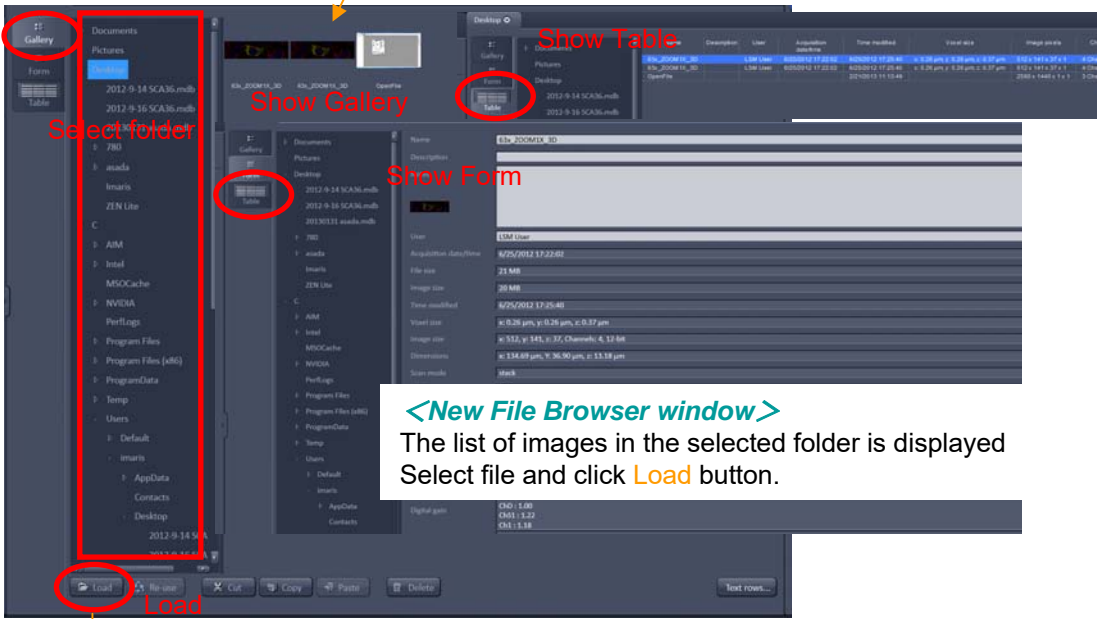
If you know the image by just the file name, choose **File - Open**.



If you need preview, choose **File - New File Browser**.



<File open window>  
If the file is not displayed, set the file type to All files.



Select folder

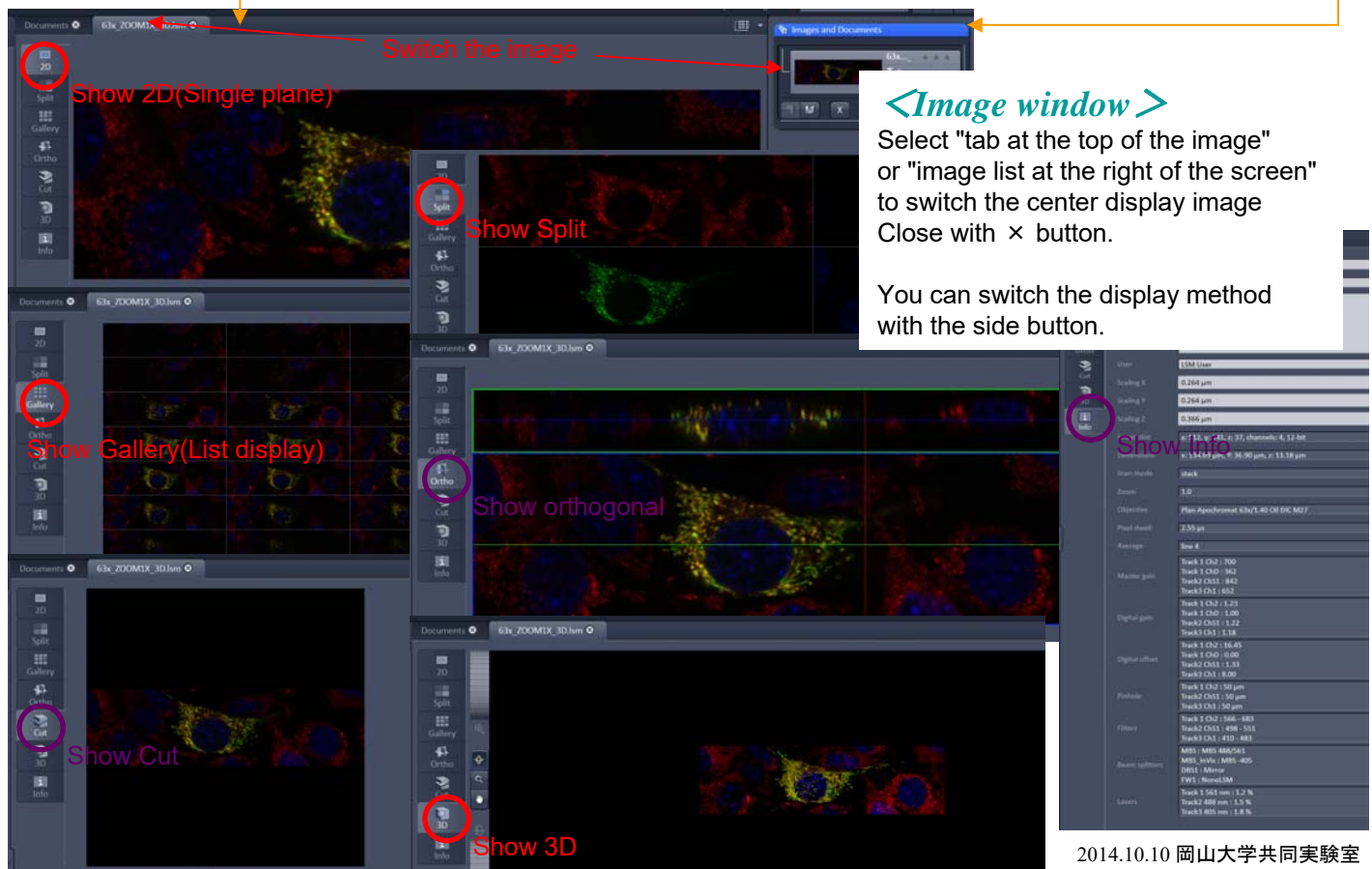
Show Gallery

Show Table

Show Form

<New File Browser window>  
The list of images in the selected folder is displayed  
Select file and click **Load** button.

Load



Switch the image

Show 2D(Single plane)

Show Split

Show Gallery(List display)

Show orthogonal

Show Cut

Show 3D

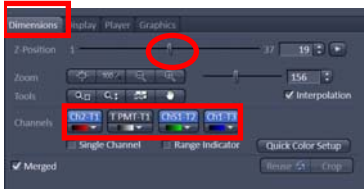
<Image window>  
Select "tab at the top of the image" or "image list at the right of the screen" to switch the center display image  
Close with × button.

You can switch the display method with the side button.



# Control tool at the bottom of image window

If you check Show All on the right side of the tab, all items are displayed.



**Dimensions...** Controls the color of the image, display, non-display, scaling.

**Z-Position...** Used to move stack images.

**Zoom...** Change zoom magnification. The icon on the far left is the auto magnification.

**Tools...** From left to right

Expand dragged place, Scale by dragging, Expansion of the same place (valid for Split and Gallery), move

Interpolation... Enable interpolation processing.

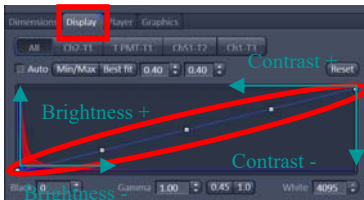
**Channels...** Click on the channel name to show / hide. Click the color to change the color.

**Single Channel...** Switch to single color display. Click on the channel name to switch channel.

**Range Indicator...** Display the saturated part and the part with intensity 0.

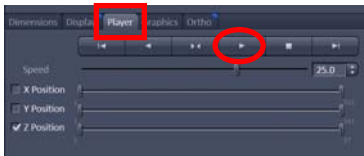
**Quick Color Setup...** Color preset

(Split only) **Merged...** Switch display / non-display of merge image



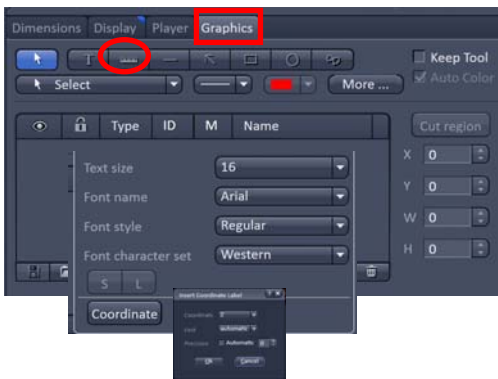
**Display...** Adjust the color tone

Choosing a channel and changing the tone curve will change the brightness of the image.



**Player...** To animate

Select motion axis and click play button.



**Graphics...** Add object in image

The side by side button is a frequently used object tool.

All object tools are in the lower pull down.

**More...** Change font

Coordinate... Write different information depending on circumstances such as time.

**Keep Tool...** Object continuous writing mode

**Auto Color...** Automatically change color

When you write an object, it will be listed.

Clicking the eye icon changes the display / non-display of the object.

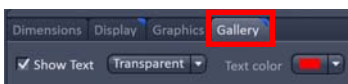
Click the lock icon to lock the object.

When you check M, the length and area are displayed. (Some objects can not be checked.)

Closed objects can be clipped through the Cut region button.

Objects can be saved / load.

Tab displayed only in the specified mode

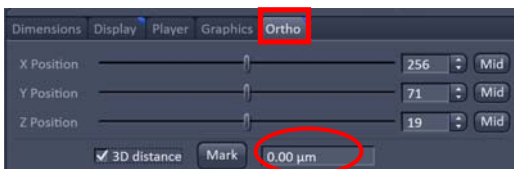


**Gallery**

**Show Test...** Show information

**Transparent...** Display information in image

**Underneath...** Display outside the image



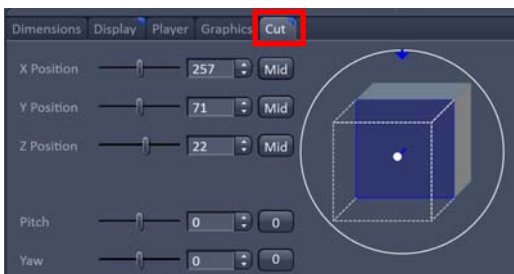
**Ortho**

**3D distance...** Measure the distance between two points

Move the crosshairs to the starting point and click Mark.

When the crosshair line is moved to the end point,

the distance from the starting point is displayed.

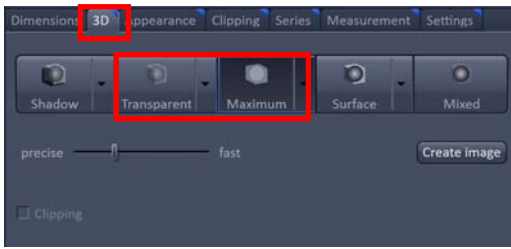


**Cut**

Drag the picture to set the section.

## Control tool at the bottom of image window (3D)

If you change the value, the initial value will be changed. Be sure to write down the initial value.



**3D**...Select the representation method of stereoscopic display.

**Shadow**...View from the front. Shadows are attached to the back.  
(Change the background color to other than black.)

**Transparent**...Transparent expression. There is a front and back.  
The inside is hard to see.

**Maximum**...Representation of maximum intensity projection.  
There is no a front and back. You can see the contents well.

**Surface**...Highlight surface

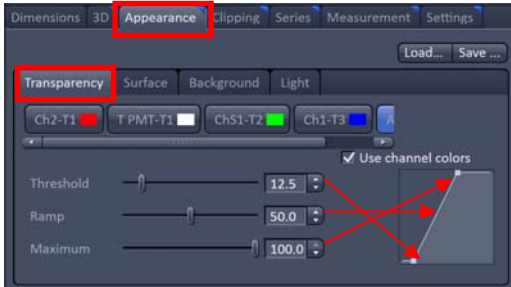
Move the bar to change the quality of the image.

Create Image...Create a new image with the set conditions.

**Appearance**...Set brightness and contrast parameters.

Tabs displayed depend on how they are expressed.

Load and Save button...Save and load parameters related to 3D.



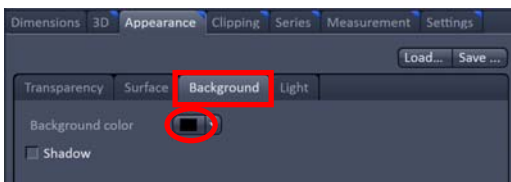
**Transparency**...Setting for transparency. Increasing the transparency makes the surface difficult to see and you can see the inside.

Threshold...Background value.

Ramp...Slope.

Maximum...max value.

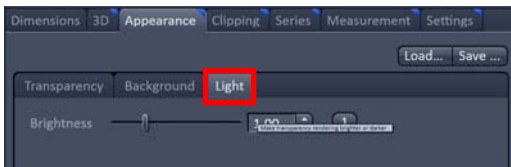
Use channel colors...Use display colors.



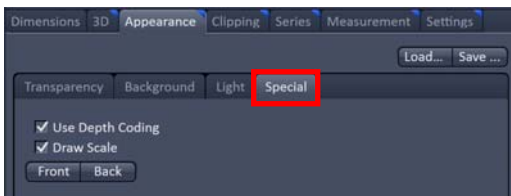
**Background**...Background color setting

Black or gray is good.

(Shadow method only) Show / hide shadow



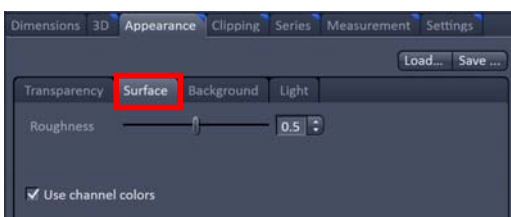
**Light**...Brightness setting



**Special**...Transparent options

Use Depth Coding...Color according to depth.

Draw Scale...Display of color bar



**Surface (Shadow)**...Parameter to change surface roughness



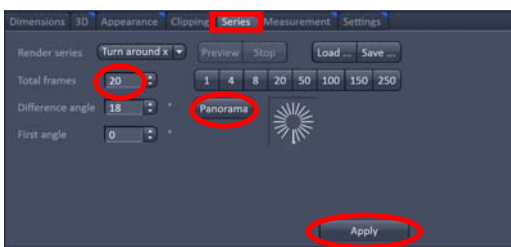
**Surface (Surface)**...Parameter to change the expression of the surface

Threshold...Background

Ambient...Shine the surface

Specular...Shine the surface

Shininess...Shininess



**Series**...Parameters for animation creation

Return to home position with **house icon**. The currently displayed position is First angle 0° .

Render series...Setting rotation axis.

Total frames...Setting the number of frames.

Difference angle...Frame spacing.

Panorama...Set to rotate once.

First angle ...Usually 0° .

Apply...Create a new animation.

# Processing Tab...Image processing

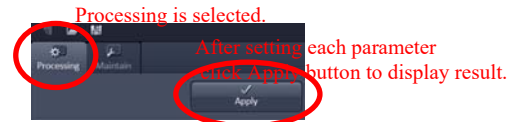
## List of Functions

- Maximum intensity projection...**Projection image creation
- Color coded projection...**Display depth in color. Specify an image and select a color pattern.
- Image calculator...**Perform image calculation. Used for creating ratio images and others.
- Average...**Perform averaging.
- Filter...**Filtering of emphasis and blur.
  - There are the following types
    - Median...Like low pixel
    - Smooth...Blur
    - Sharpen...emphasis
    - Band...Not like focusing
    - Gradient...Only the contour
- Linear unmixing...**Separate the lambda stack image using spectral data stored in advance.
- Ion Concentration...**unknown
- Correlation...**unknown
- Modify Series...**Change the orientation of the stack image and cut and paste.
- Mode** has the following.

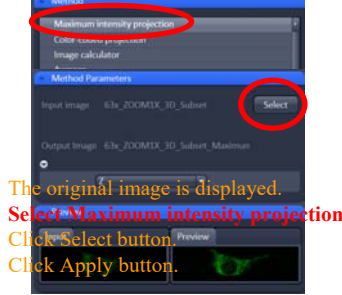
- Convert dimension...Change stack axis. Select an image and select the change axis.
- Concatenate image...**Concatenation of stack images
- Rotate image...**Rotate the image 90 degrees. Specify the image and choose right rotation or left rotation.
- Mirror image...**Make a mirror image. Just choose an image.
- Reverse Z-stack...**Invert the Z axis. Just choose an image.
- Reverse time...**Inversion of time axis. Just choose an image.
- Make time series...**Join the images and make Time series.
- Modify Z step...**Change the interval of Z.
- Convert to lambda...**Changed multichannel image to Lambda stack image.
- Modify Acquisition date...**Changing the image acquisition date.
- Modify channel name(s)...**Change channel name.

- HDR-imaging...**Make an High Dynamic Range image with image processing.
- Copy...**Image duplication and cut out. There is the following menu.
  - Copy channel...**Adds or replaces the selected channel to another image.
  - Duplication...**Duplicate. Just choose an image.
  - Delete image...**Delete part of the stack image.
  - Subset...**Cut out part of the stack image.

- ICS...**unknown
- Adjust...**Adjust the brightness of the image. There are the following submenus.
  - Burn brightness and contrast...**Change the initial value of brightness and contrast.
  - Interpolate brightness and contrast** Increase brightness and contrast continuously.
  - Channel shift...**Fix gap between channels.
  - Shading correction...**unknown

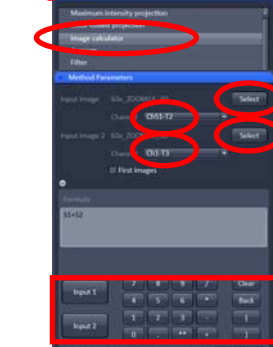


Maximum intensity projection



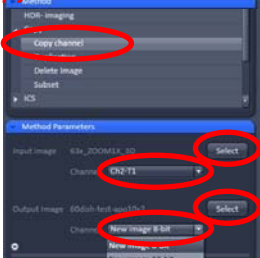
The original image is displayed.  
 Select Maximum intensity projection.  
 Click Select button.  
 Click Apply button.

Image calculator



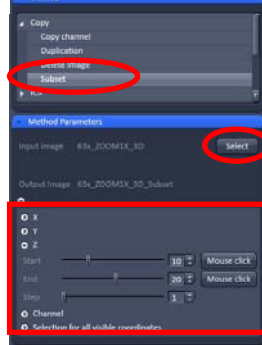
Select "Image calculator".  
 Display the first image and click the Select button of Input Image.  
 Display the second image and click the Select button of Input Image.  
 Select the channel to use for computation with Channel.  
 Enter the formula using the keys on the screen.  
 Click Apply button.

Copy channel



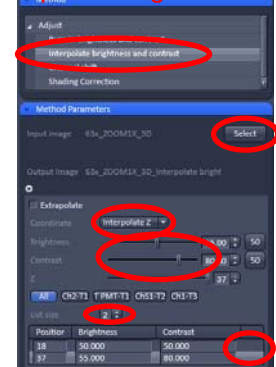
Select Copy. Copy channel  
 Display the source image and click Select button on input image.  
 Select the source channel in Channel.  
 If you want to add to other images, display the destination image and click Select button on Output.  
 Select the destination channel.  
 "New image" creates a new image.  
 "New channel" adds a new channel to the Output image.  
 When an existing channel is selected, the existing channel is replaced.  
 Click Apply button.

Subset



Select Copy-Subset.  
 Display the source image and click Select button on input image.  
 Set the range you want to cut out.  
 Click Apply button.

Interpolate brightness and contrast

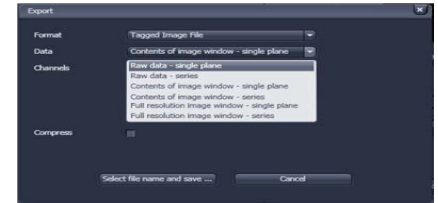


Select Adjust-Interpolate brightness and contrast.  
 Display the source image and click Select button on input image.  
 Select Interpolate Z from the item of Coordinate.  
 Set List size to 2.  
 Select the first line. (Click the right end.)  
 Move the Z bar to the position where you want to start changing the brightness.  
 Select the second line.  
 Move the Z-bar to the end position.  
 Adjust the brightness with brightness and contrast.  
 Click Apply button.

## Export

### File - Export

- Format ... (Image) Tagged image file(TIF-8bit),JPEG  
(Movie) Video for Windows(AVI)
  - Data ... Raw data ... Image for analysis. Assign channels to red, green and blue.  
Contents of image window ... Screen snapshot.  
Full resolution image window ... Output at original image resolution.  
(The size of the character changes slightly)
    - single plane ... Current display plane only.
    - series ... Export all plane.
  - Channels ... Select color assignment when selecting Raw data.
  - Compress ... Compression setting. The lower the ratio, the more compression.
- Click "Select file name and save" button and save the image.  
If you select series, the file will be output add a sequential number.



### Create an animation to scale

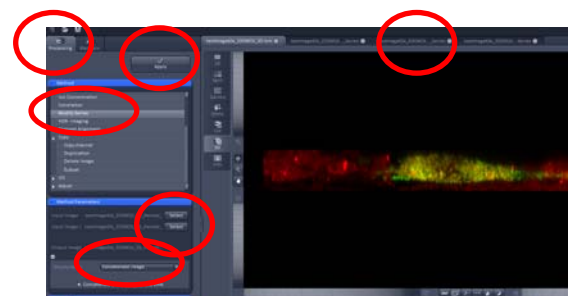
- Open the Z stack image and select the 3D button.
- Set the 3D settings. Select Series tab.
- Changed the Render series field to Start and end.
- Set Total frames.
- Select Start tab.



- Move the 3D image to the position where you want to start the animation.
- Select End tab. Move the 3D image to the position where you want to end the animation.
- Click the Apply button to create an animation that moves from the Start position to the End position.
- \*You can also be moved using scaling.
- \*You can create the following animation by typing the End position value into the Start position.
- You can also connect multiple animations.

### How to connect animations

- Open the file you want to connect.
- Select Processing tab. Select "Modify series".
- Display the animation file of movement start position.
- Click "Select" of Input image.
- Display the animation file of movement end position.
- Click "Select" of Input image2.
- Change "Modify mode" to "Concatenate image".
- Select "Concatenate Z".
- Click Apply to create a connected file.
- If you select the created file as an Input image, you can add more.
- Finally, convert to video with Export.





# About ZEN Lite 2012 32bit edition (The 64-bit Blue Edition is the same)

The 32-bit version is not for laser microscopes. The operation method and the function are completely different. Not recommended as a viewer. However, there is a function that can only be done with the 32 bit version, so I will introduce it.

↓ ↓ ↓ **【CAUTION】** ↓ ↓ ↓

Unable to resave in LSM format.

## Convenient display switching

## Operation in Dimension

When you want to change the color of an object.

Right-click

The text color setting is in the TEXT item.

When you want to change display information.

Right-click

Delete and recorder items here.

Double click if you want to add an item.

You can customize the display items.

The items here are displayed.

Double-click what you want to add.

When the unit of scale is strange.

Switch to Info display, and click Edit button of Scaling.

Change the unit of X.

20,000 nm

20 µm

## How to export

File-Export-Export

Select file format

Check what you want to output

If you select "Define subset", specify the required range

Check the necessary items other than the image.

Click the Apply button when you have made the settings.

Batch export is possible by batch processing.

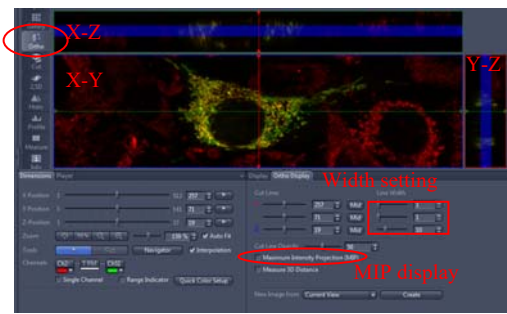
Batch Image Export

Add files

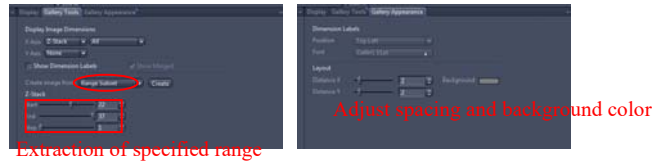
Parameters are the same as normal export

Click the Apply button when you have made the settings. Exported to the same folder as the original file.

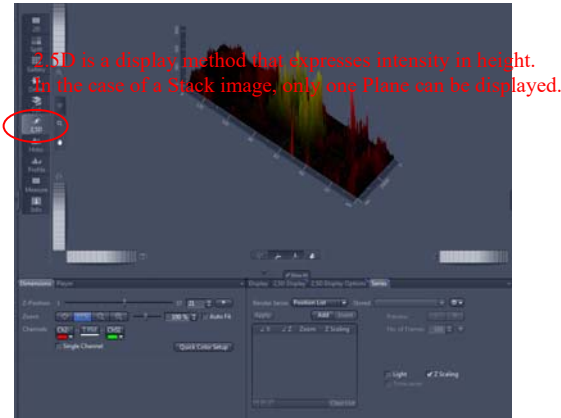
## Wide ortho display



## Gallery tools with detailed settings

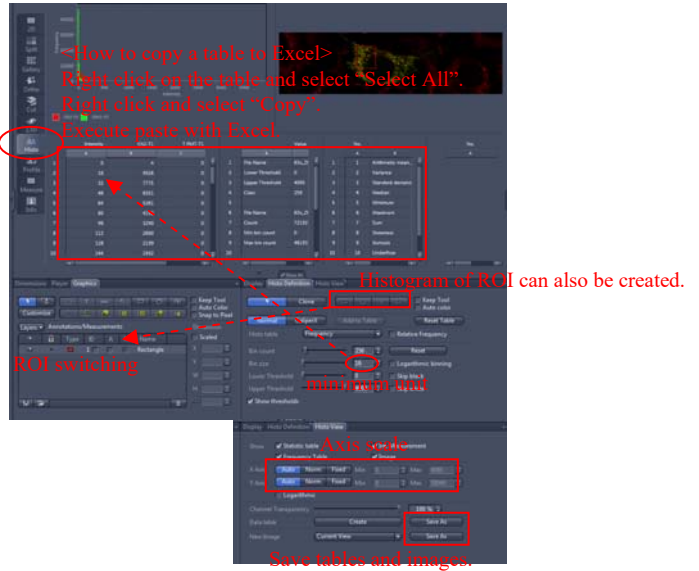


## High performance 2.5D display in vain

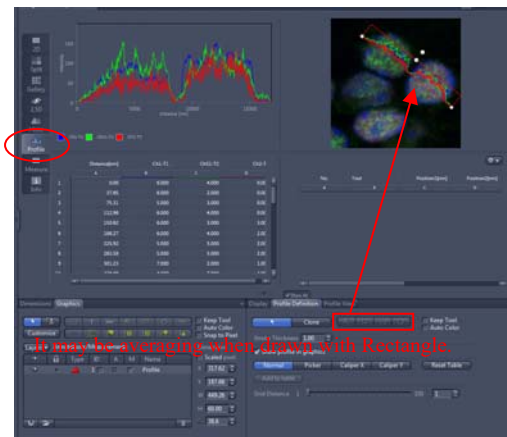


## Histogram display (Graph the intensity distribution)

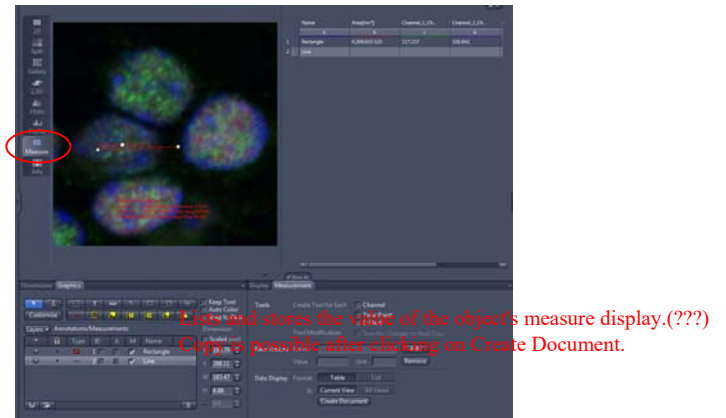
X axis=Intensity, Y axis=Number of pixels



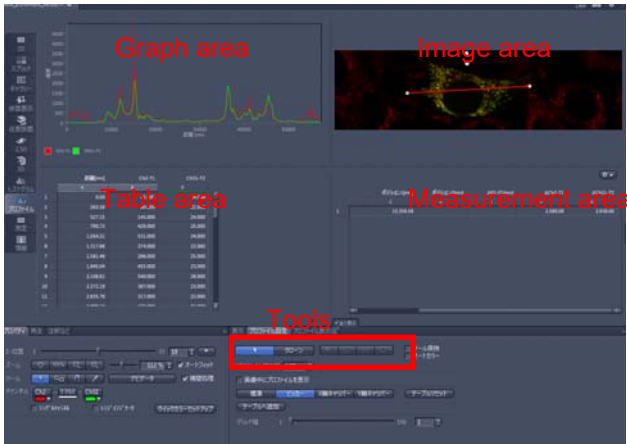
## Profile display (Display the intensity graph of any place.)



## Measurement mode



# About Profile



## [Profile Definition]

Draw a shape in the image area using the shape tool. Intensity information is displayed in the graph area and the table area.

If you make the line width thicker or draw a rectangle, it will be averaged.

You can check the intensity information of any place with the picker, calipers X and Y.

The picker can confirm one point of information.

The caliper can check the information of the difference between two points.

Click Add to table to extract the information.



## [Profile View]

Select the item you want to display in Show.

By fixing the axis, the range can be expanded.

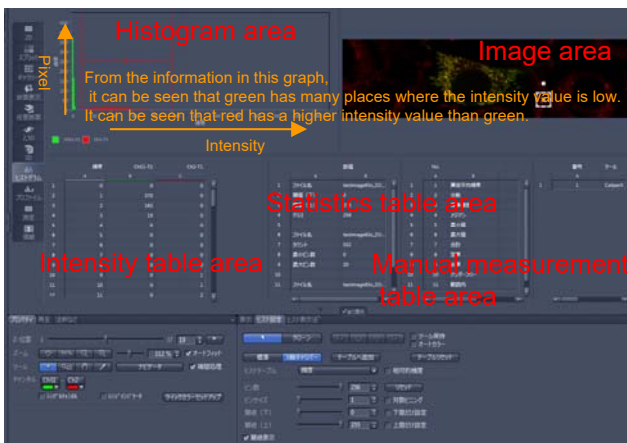
You can convert the values in the table area to a csv file by clicking the Save button for data table field.

Click Create to export the table to another window.

You can save the graph as an image

by clicking Save from the New image from item.

# About Histogram



## [Histo Definition]

When you draw a shape in the image area using the shape tool, the histogram within that range is displayed.

(When there is no shape, the whole image is targeted.)

If you check the relative frequency, the graph will be 100% overall.

Histogram resolution changes with bin count and bin size.

Set the range to remove from the histogram with lower threshold and upper threshold.

If you check "show thresholds",

the part corresponding to the threshold will be filled.

(Lower threshold is blue.Upper threshold is red.)



## [Histo view]

Same as profile view.