

Software Manual

## **ZEISS ZEN core - Custom Applications**

Dendritic Arms Spacing



## ZEISS ZEN core - Custom Applications

Original Manual

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# 1 General

## NOTICE

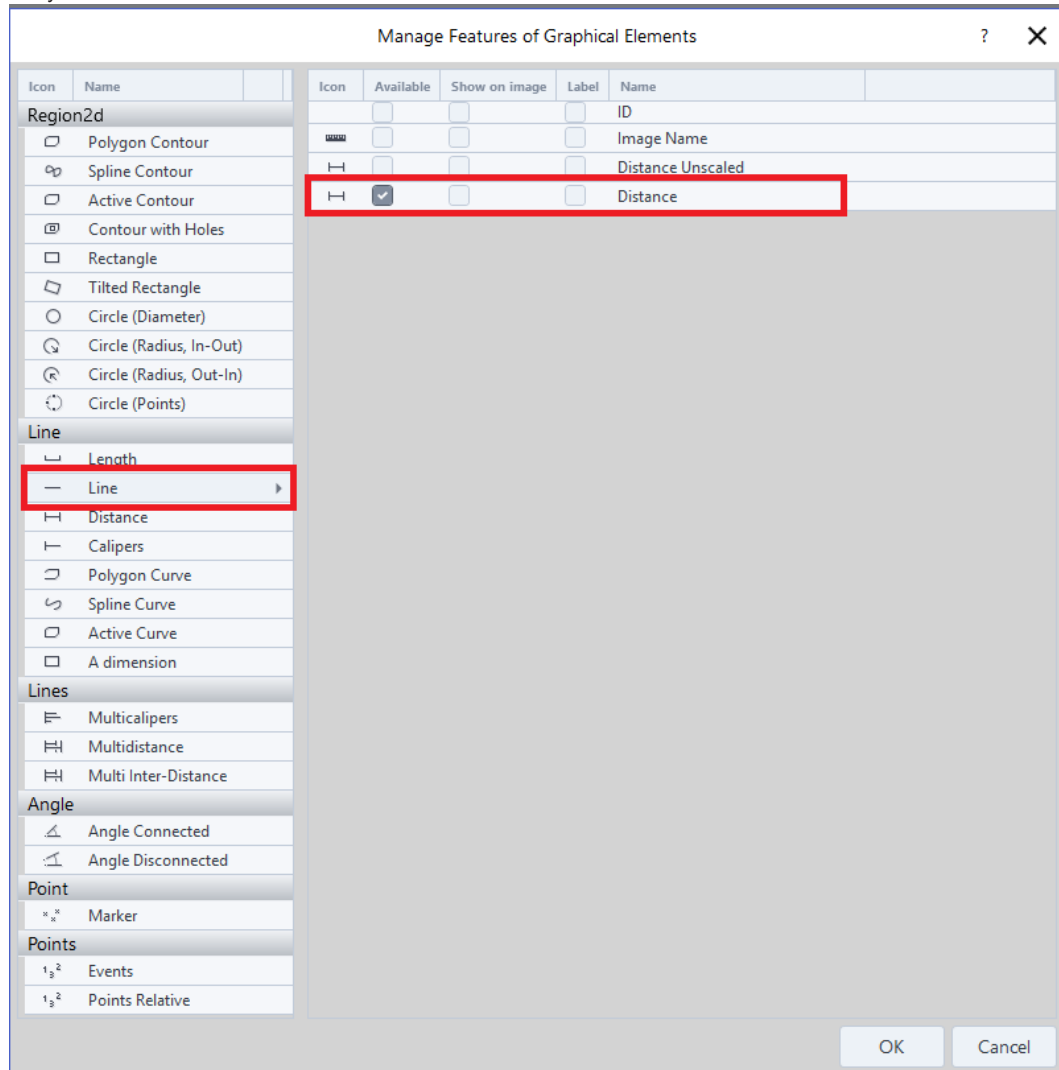
The application works with **ZEN core v2.7** version 2.7.80.00005 and higher.

This application is an extension for **ZEN core** and provides **Dendritic Arms Spacing** measurement.

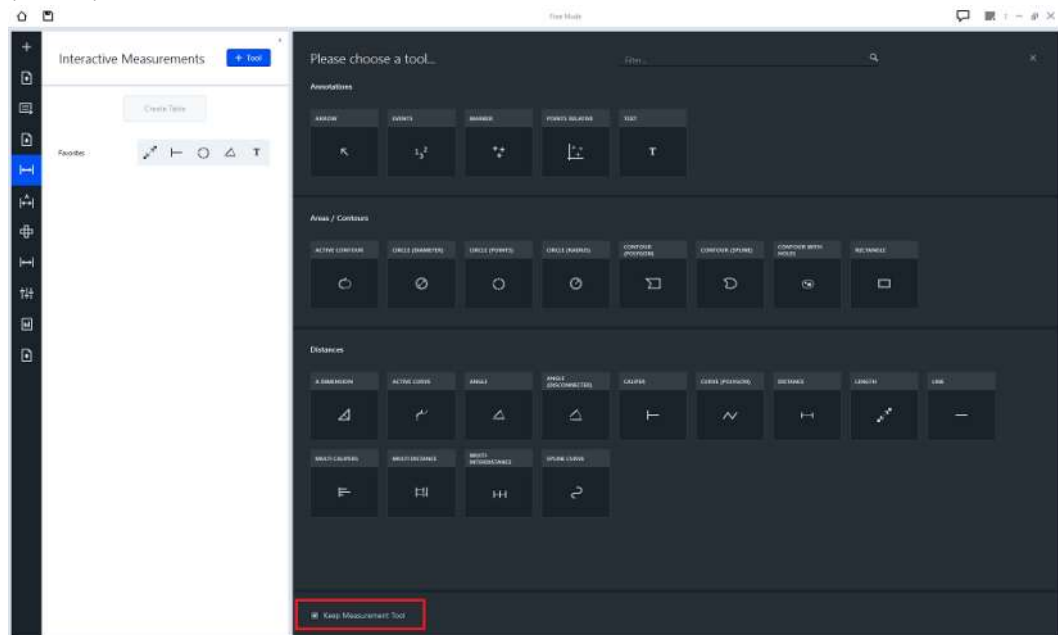
It requires the **ZEN Module Image Analysis**.

## 2 Prerequisites

- You have setup the **User Management** with a **Supervisor** and an **Operator** account. Refer to the **ZEN core Online Help** topics **Basics of User and Group Management** and **Creating and Managing User Accounts** for detailed information.
- Under **Maintenance, Manage Features for Graphical Elements** you have setup the Interactive Measurement Features for the Measurement tool **Line**. Only the feature **Distance (Available)** must be selected for the measurement tool.



- You have checked **Keep Measurement Tool** in the **Interactive Measurements** task (+ **Tool**) in **Free Examination**.



## 3 Content of the application

The job templates have to be imported in **ZEN core**.

The application consists of four job templates and one demo image.

For data presentation with statistical values:

- **Dendritic arms spacing - with Load image.czjob**
- **Dendritic arms spacing - with Acquire image.czjob**

For data presentation

with all individual values and statistical values and

with individual values with minimum count 5 and statistical values:

- **Dendritic arms spacing - with Load image - Advanced.czjob**
- **Dendritic arms spacing - with Acquire image - Advanced.czjob**

Demo image:



- **demoDAS.jpg**

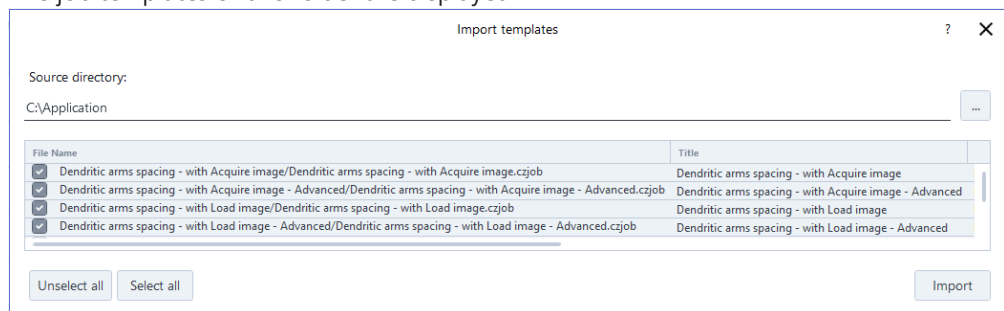
## 4 Importing Job Templates (Supervisor)

- Prerequisite** ✓ You have started **ZEN core**.  
 ✓ You have setup the **User Management**.

1. Click on **Supervisor**.
2. Enter your password and click on **Login**.
3. Click on **Job Mode**.







4. Click on  to import the job templates.  
 → The **Import templates** dialog appears.
5. Click on  and select the folder **Application** of the CD.  
 → The job templates of this folder are displayed.



6. Activate the job templates and click on **Import**.

The job templates have been imported and appear in the category **DAS**.

TITLE	LAST ACCESS	CATEGORY
 Dendritic arms spacing - with Acquire image	24.02.2020 13:17:50	DAS
 Dendritic arms spacing - with Acquire image - Advanced	24.02.2020 13:18:12	DAS
 Dendritic arms spacing - with Load image	24.02.2020 13:17:15	DAS
 Dendritic arms spacing - with Load image - Advanced	24.02.2020 13:17:32	DAS



## 5 Editing Job Templates (Supervisor)

**Prerequisite** ✓ You have started **ZEN core**.

✓ You have setup the **User Management**.

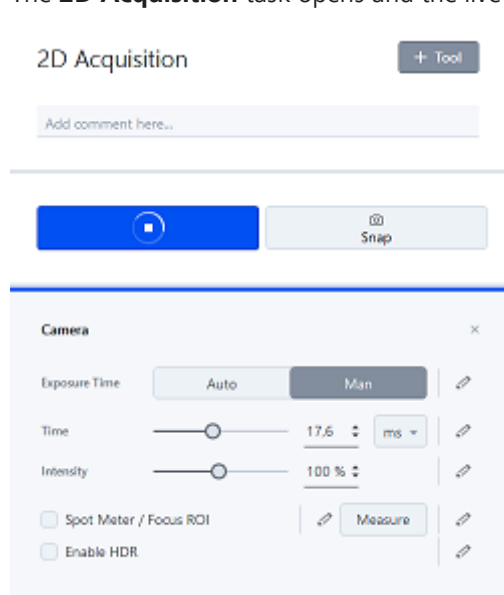
1. Click on **Supervisor**
2. Enter your password and click on **Login**.
3. Click on **Job mode**.
4. Open the category **DAS**.
5. Open the job template **Dendritic arms spacing - with Acquire image** (**Dendritic arms spacing - with Acquire image - Advanced**) with **Edit** of the context menu.

→ The job template opens and the hardware initializes.



6. Click on .

→ The **2D Acquisition** task opens and the live image appears.

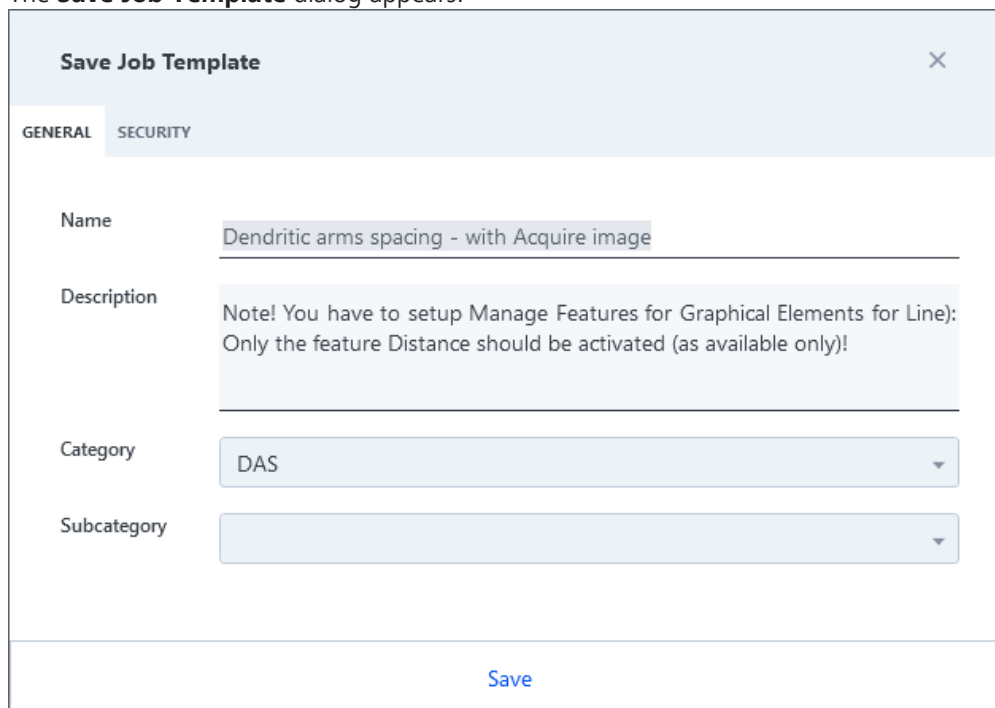


7. Setup the camera for your system.




8. Click on to save the job template.

→ The **Save Job Template** dialog appears.



9. Click on **Save** to save the modified job template  
**Dendritic arms spacing - with Acquire image**  
**(Dendritic arms spacing - with Acquire image - Advanced).**

10. Click on  to leave the **Edit** mode.

The job template

**Dendritic arms spacing - with Acquire image**





**(Dendritic arms spacing - with Acquire image - Advanced)**

is ready to be used by the **Operator**.

## 6 Measuring DAS with Automatic Image Processing (Operator)

- Prerequisite**
- ✓ You have started **ZEN core**.
  - ✓ You have checked **Keep Measurement Tool** in the **Interactive Measurement** task (+ **Tool**).
  - ✓ You have logged in as an **Operator**.

1. Click on **Job Mode**.  
→ The list of job templates appear.
2. Select the category **DAS**.
3. Select the job template **Dendritic arms spacing – with Load image** to work with already saved images.

TITLE	LAST ACCESS	CATEGORY
 Dendritic arms spacing - with Acquire image	24.02.2020 13:17:50	DAS
 Dendritic arms spacing - with Acquire image - Advanced	24.02.2020 13:18:12	DAS
 Dendritic arms spacing - with Load image	24.02.2020 13:17:15	DAS
 Dendritic arms spacing - with Load image - Advanced	24.02.2020 13:17:32	DAS

4. Double click on the selected job template or start the job with **Run** of the context menu.  
→ The first **Form** task is displayed.
5. Enter the sample information in the form.

🏠
Dendritic arms spacing - with Load image

Form

⚙️ **NOTE!**  
This job template requires the ZEN core Module Image Analysis!


Form Selection

Project number 1234567

Sample name Sample123

User

Date 24.02.2020

6. Click on  to continue with the next step.  
→ The second **Form** task is displayed.
7. Deactivate **Do processing with user interaction** to run the image processing automatically.


🏠
Dendritic arms spacing - with Load image

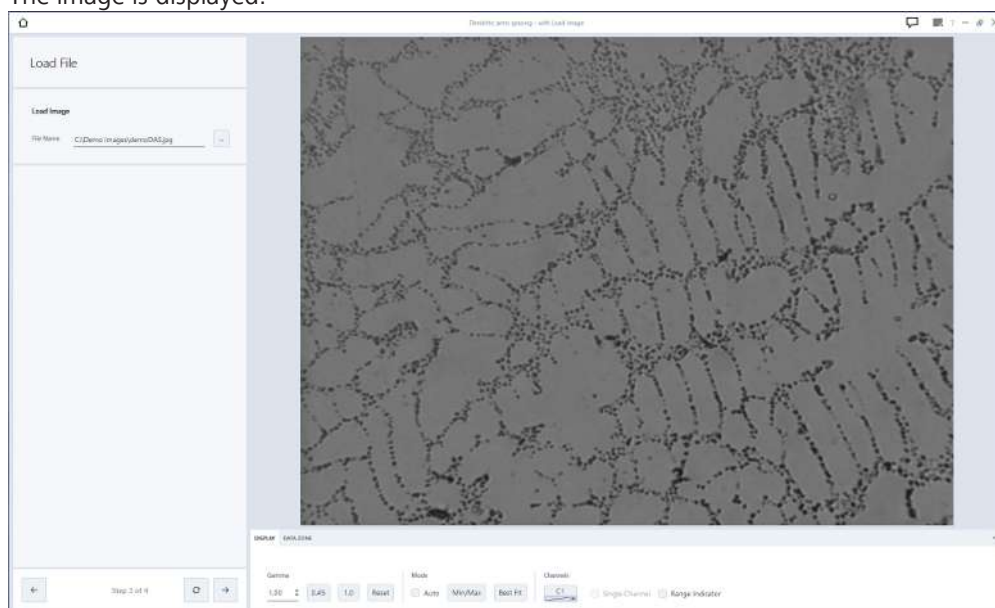
Form


Form Selection

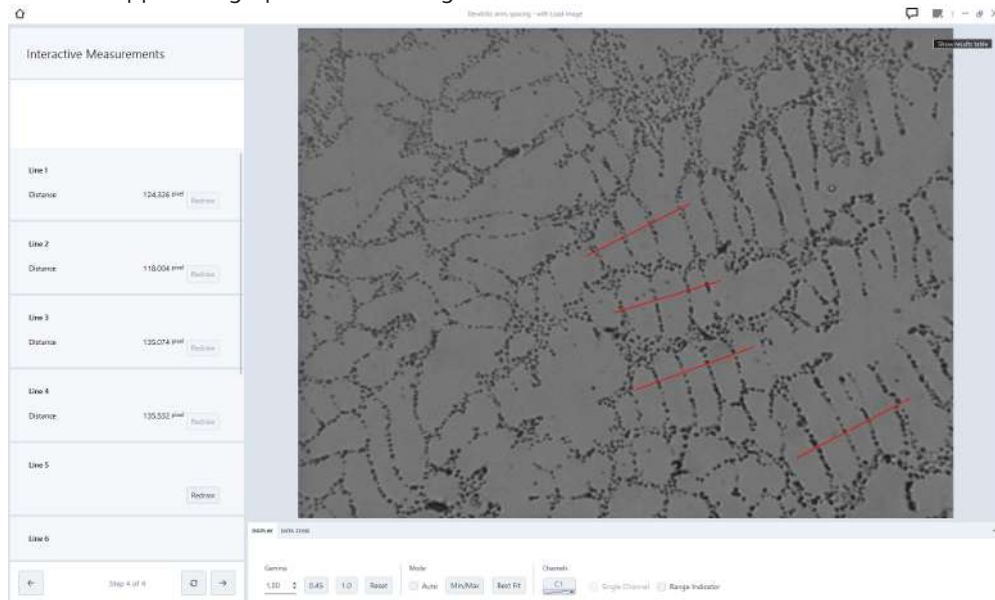
☐ Do processing with user interaction

8. Click on  to continue with the next step.

- The **Load File** task is displayed.
- 9. Click on  and select an image.
- 10. Click on **Open** to load the image.
- The image is displayed.

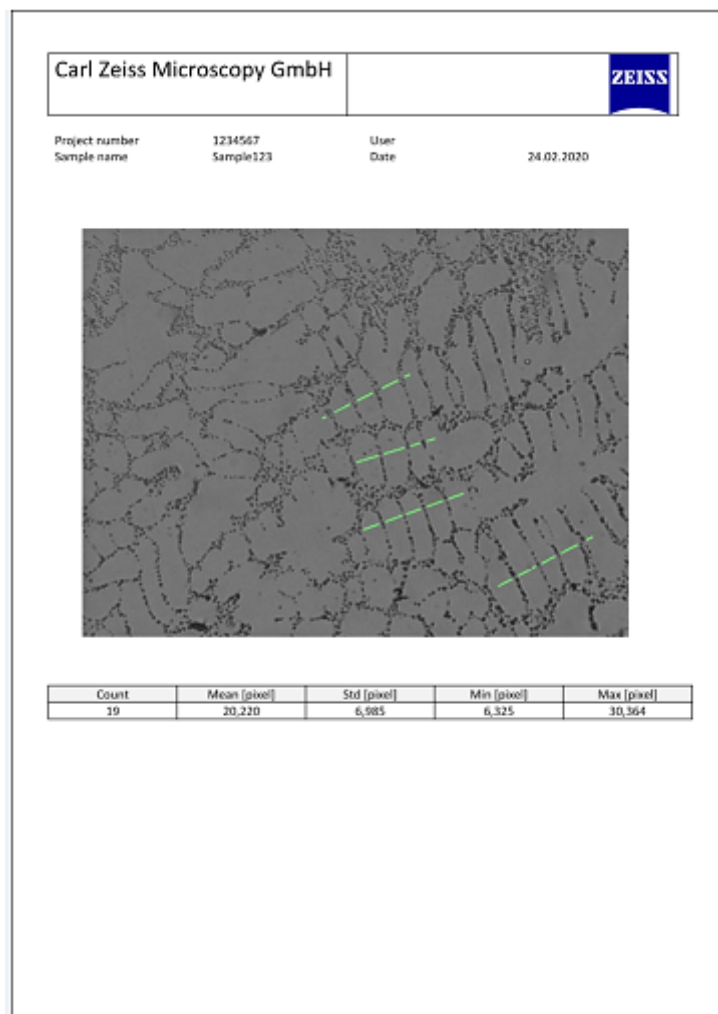


- 11. Click on  to continue with the next step.
- The **Interactive Measurement** task is displayed.
- 12. Click on **Redraw** and draw a line. Repeat this step for all dendrites to be measured.
- The lines appear as graphics in the image.



- 13. Click on  to continue with the next step.

→ The measured image and the datatable with statistics are displayed as results in a report.



14. Click on **Save and Repeat** to save the results in the archive and to repeat the workflow for the next image.

15. Click on **Save and close** to save the results in the archive.

→ The **Save Results** dialog appears.





16. Enter a name or use the default name and click on **Save**.

The results have been saved under the defined **Name** in the archive.

## 7 Measuring DAS with Interactive Image Processing (Operator)

- Prerequisite**
- ✓ You have started **ZEN core**.
  - ✓ You have checked **Keep Measurement Tool** in the **Interactive Measurement** task (+ **Tool**).
  - ✓ You have selected **Operator** and logged in with your Operator password.

1. Click on **Job mode**.
2. The list of job templates appear.
3. Select the category **DAS**.
4. Select the job template **Dendritic arms spacing – with Acquire image** to work with already saved images.

TITLE	LAST ACCESS	CATEGORY
 Dendritic arms spacing - with Acquire image	24.02.2020 13:24:45	DAS
 Dendritic arms spacing - with Acquire image - Advanced	24.02.2020 13:18:12	DAS
 Dendritic arms spacing - with Load image	24.02.2020 13:17:15	DAS
 Dendritic arms spacing - with Load image - Advanced	24.02.2020 13:17:32	DAS

5. Double click on the selected job template or start the job with **Run** of the context menu.  
→ The first **Form** task is displayed.
6. Enter the sample information in the form.

Form

NOTE!  
This job template requires the ZEN core  
Module Image Analysis!


Form Selection

Project number 123456789

Sample name Sample133

User


Date 25.02.2020

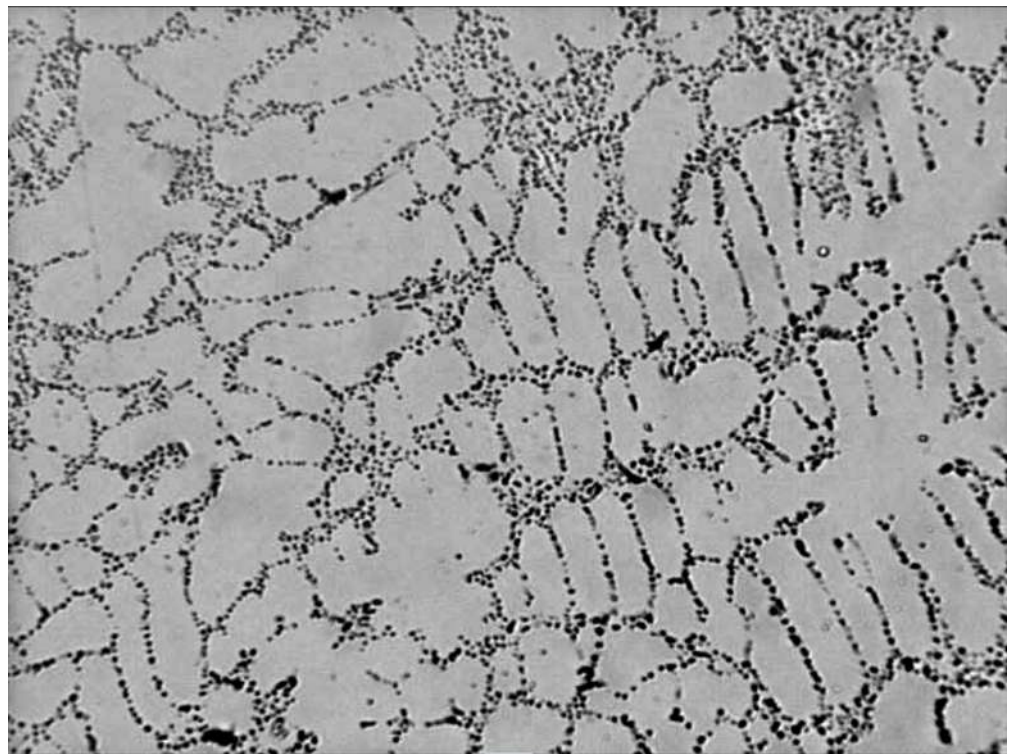
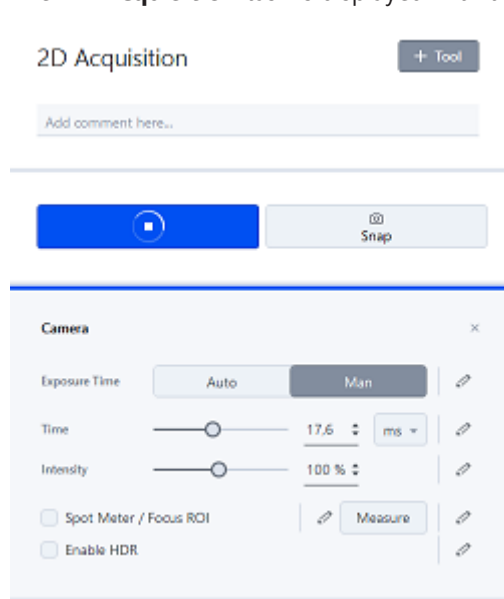
7. Click on  to continue with the next step.  
→ The second **Form** task is displayed.
8. Activate the checkbox **Do processing with user interaction** to run the image processing interactively.


Form

Form Selection

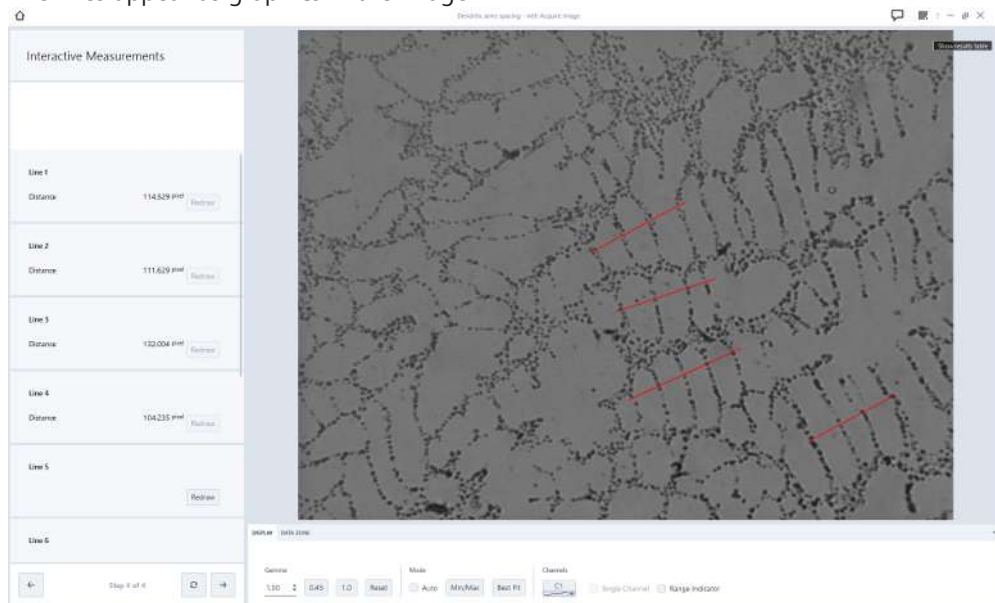
☒ Do processing with user interaction


9. Click on  to continue with the next step.  
 → The **2D Acquisition** task is displayed with the live image.



10. Search a field of view and focus the image.  
 11. Click on **Measure** to adjust the **Exposure Time**.  
 12. Click on  to continue with the next step.  
 → The image has been acquired.  
 → The **Interactive Measurement** task is displayed.  
 13. Click on **Redraw** and draw a line. Repeat this step for all dendrites to be measured.

→ The lines appear as graphics in the image.



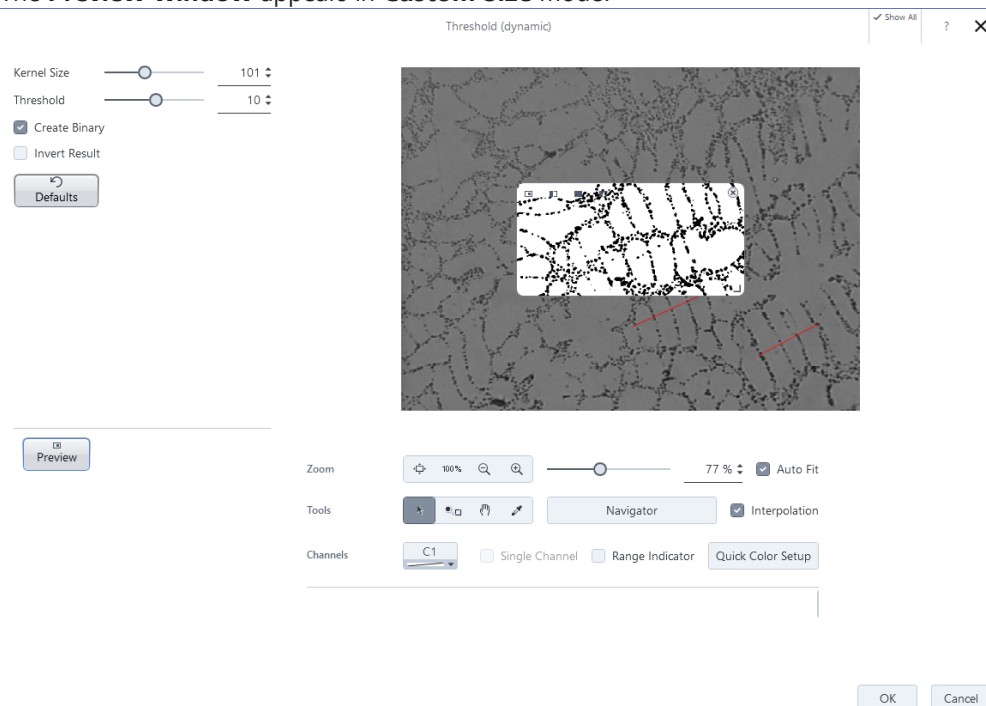
14. Click on  to continue with the next step.

→ The **Threshold (dynamic)** dialog appears.



15. Click on  to view the processing.

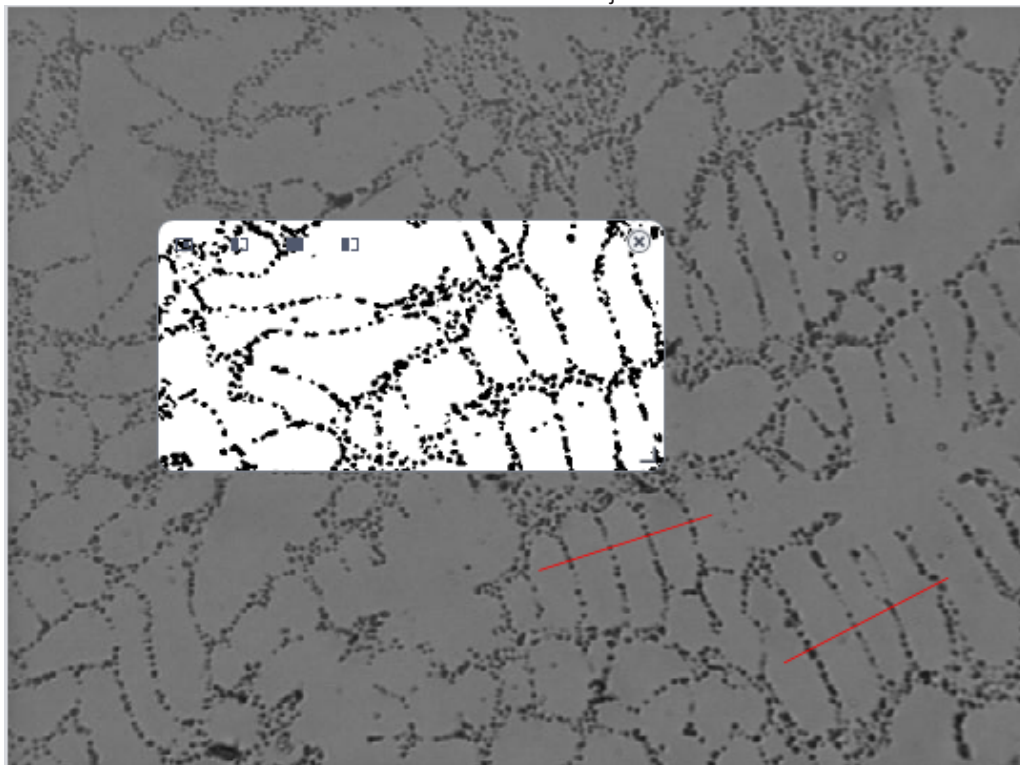
→ The **Preview window** appears in **Custom Size** mode.




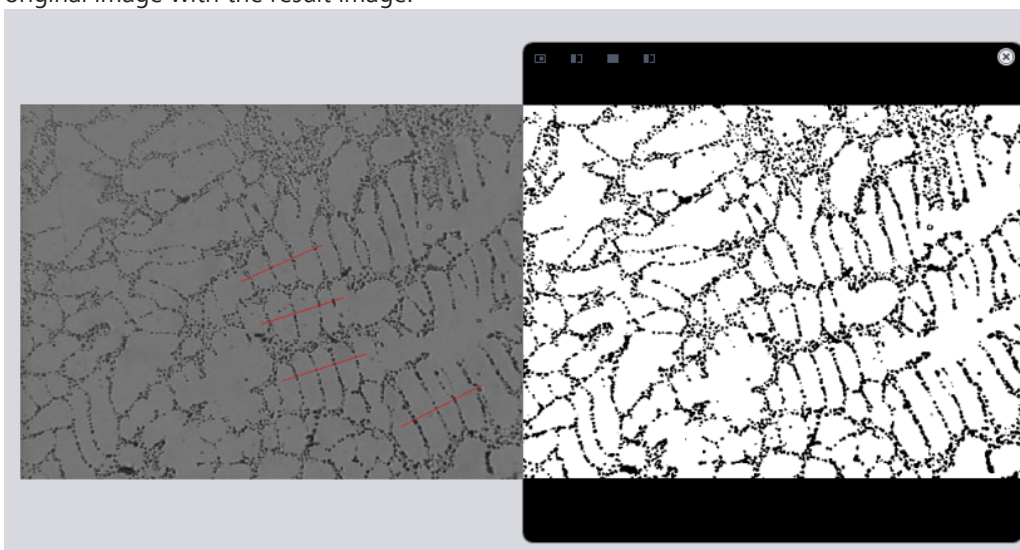
16. Modify **Kernel Size** and **Threshold**, if necessary, to detect the non-dendritic objects.



17. Move the **Preview window** to check the detected objects.



18. Click on  to display the **Split Mode** and compare the whole original image with the result image.



19. Click on  to switch back to the **Custom Size Mode**.

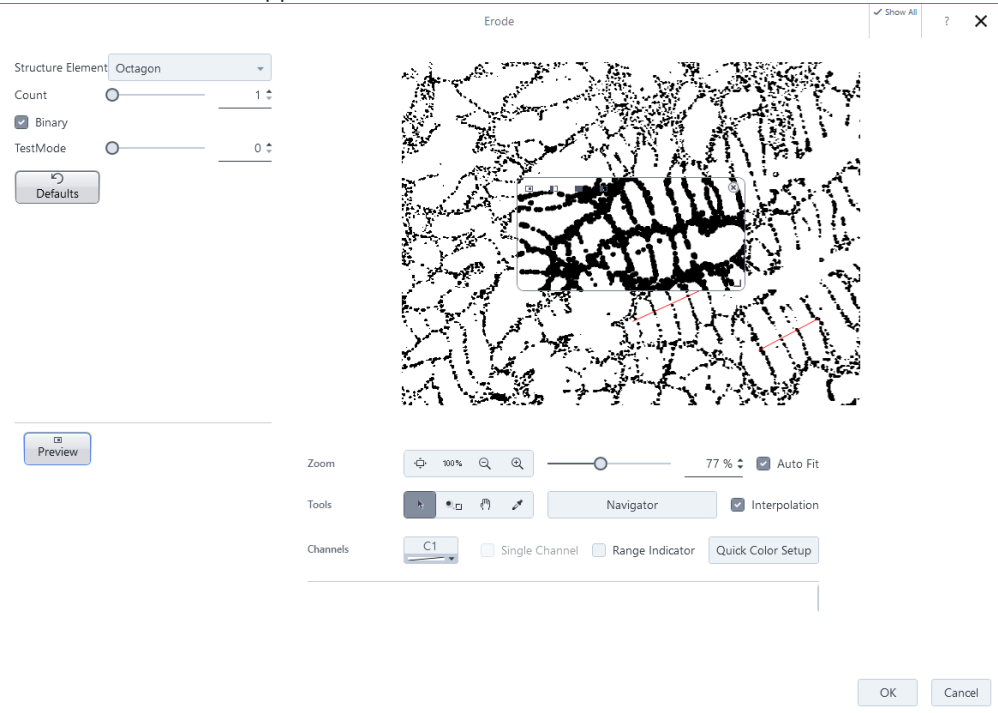
20. Click on **OK** to continue with the next processing function.

→ The **Erode** dialog appears.



21. Click on  to view the processing.

→ The **Preview** window appears in **Custom Size** mode.



22. Modify **Structure Element** and **Count**, if necessary, to reduce the size of the non-dendritic objects.

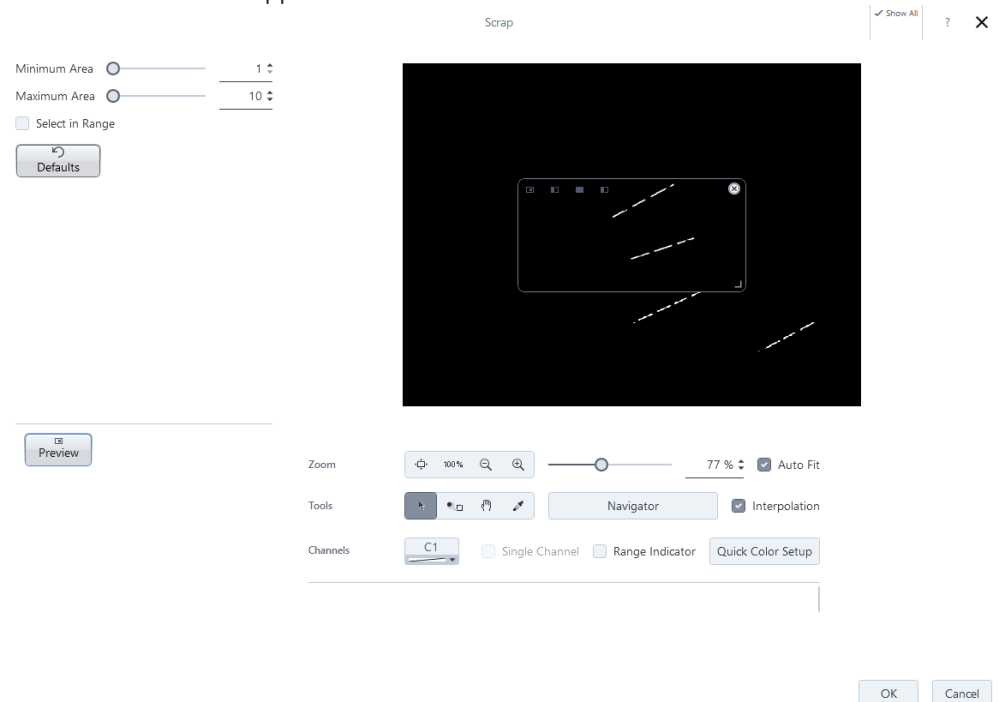
23. Click on **OK** to continue with the next processing function.

→ The **Scrap** dialog appears.



24. Click on **Preview** to view the processing.

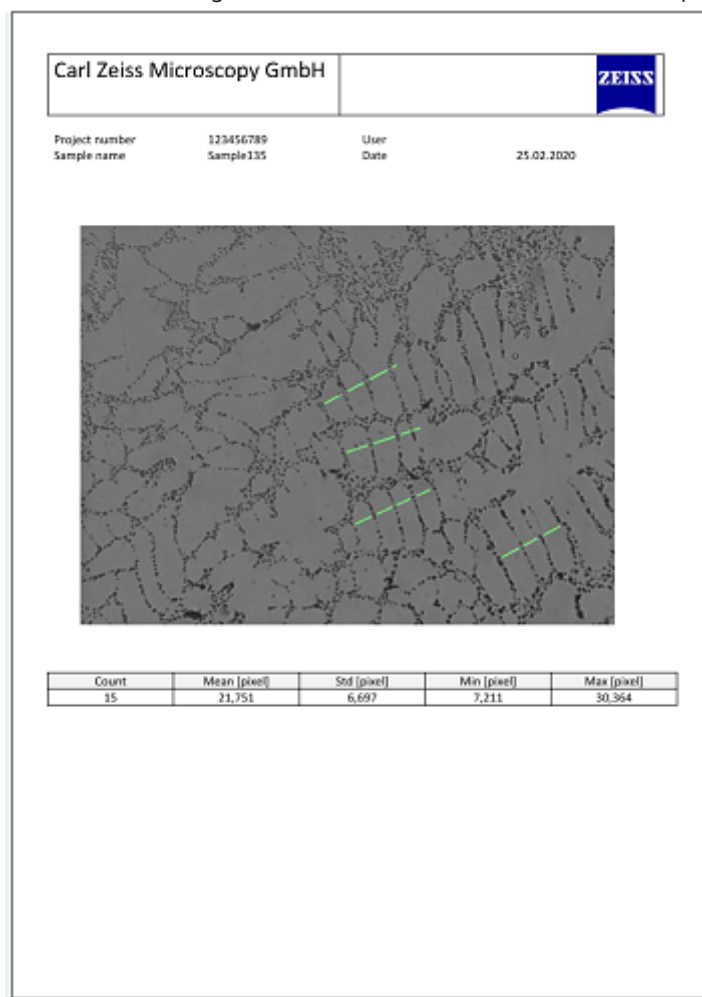
→ The **Preview** window appears in **Custom Size** mode.



25. Modify **Minimum Area** and **Maximum Area**, if necessary, to remove small artifacts.

26. Click on **OK** to continue with the next step.

→ The measured image and the datatable with statistics are displayed as results in a report.



27. Click on **Save and repeat** to save the results in the archive and to repeat the workflow for the next image.

28. Click on **Save and Close** to save the results in the archive.

→ The **Save Results** dialog appears.

Save Results

Name: Dendritic arms spacing - with Acquire image

Save Cancel





29. Enter a name or use the default name and click on **Save**.

The results have been saved under the defined **Name** in the archive.

## 8 Measuring DAS with Automatic Image Processing and Individual Values (Operator)

- Prerequisite**
- ✓ You have started **ZEN core**.
  - ✓ You have checked **Keep Measurement Tool** in the **Interactive Measurement** task (+ **Tool**).
  - ✓ You have logged in as an **Operator**.

1. Click on **Job mode**.
2. The list of job templates appear.
3. Select the category **DAS**.
4. Select the job template **Dendritic arms spacing - with Load image - Advanced** to work with already saved images.

TITLE	LAST ACCESS	CATEGORY
 Dendritic arms spacing - with Acquire image	24.02.2020 13:24:45	DAS
 Dendritic arms spacing - with Acquire image - Advanced	24.02.2020 13:18:12	DAS
 Dendritic arms spacing - with Load image	24.02.2020 13:17:15	DAS
 Dendritic arms spacing - with Load image - Advanced	24.02.2020 13:17:32	DAS

5. Double click on the selected job template or start the job with **Run** of the context menu.  
→ The first **Form** task is displayed.
6. Enter the sample information in the form.

Form

NOTE!  
This job template requires the ZEN core  
Module Image Analysis!


Form Selection

Project number 987654

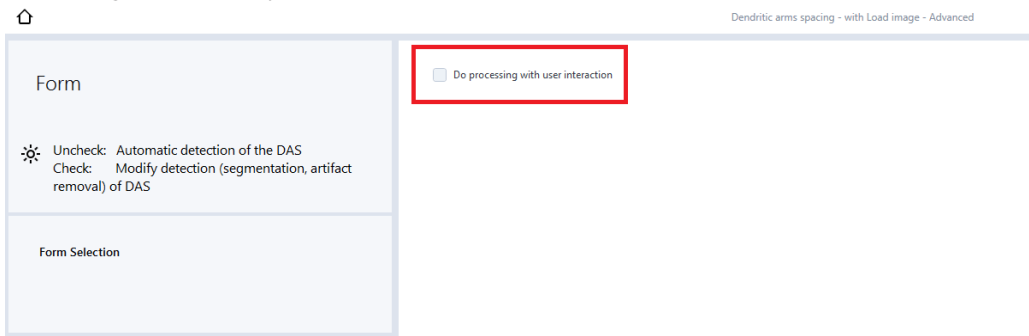
Sample name Sample987



User

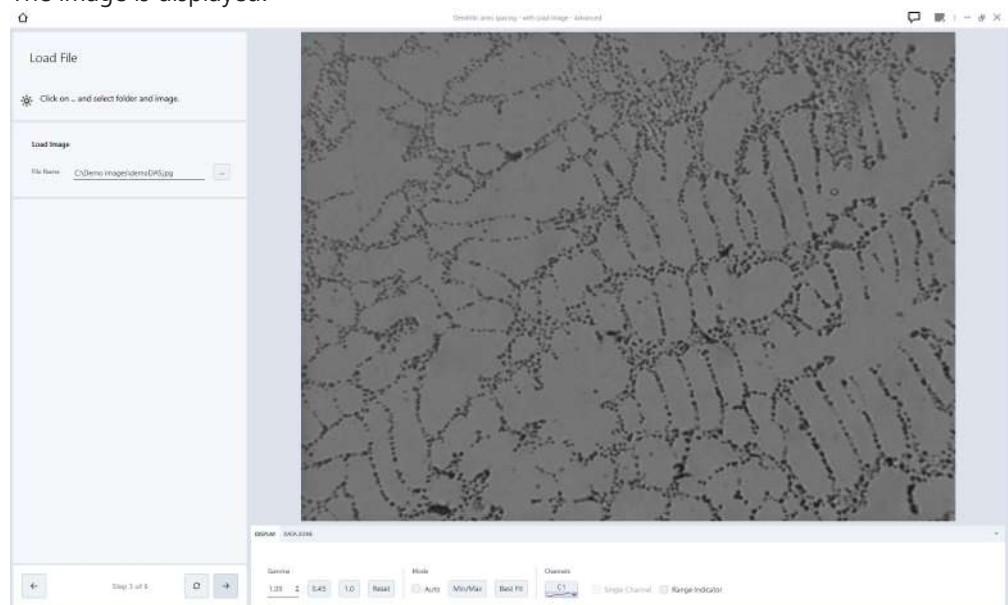
Date 24.02.2020


7. Click on  to continue with the next step.  
→ The second **Form** task is displayed.

8. Deactivate the checkbox **Do processing with user interaction** to run the image processing automatically.

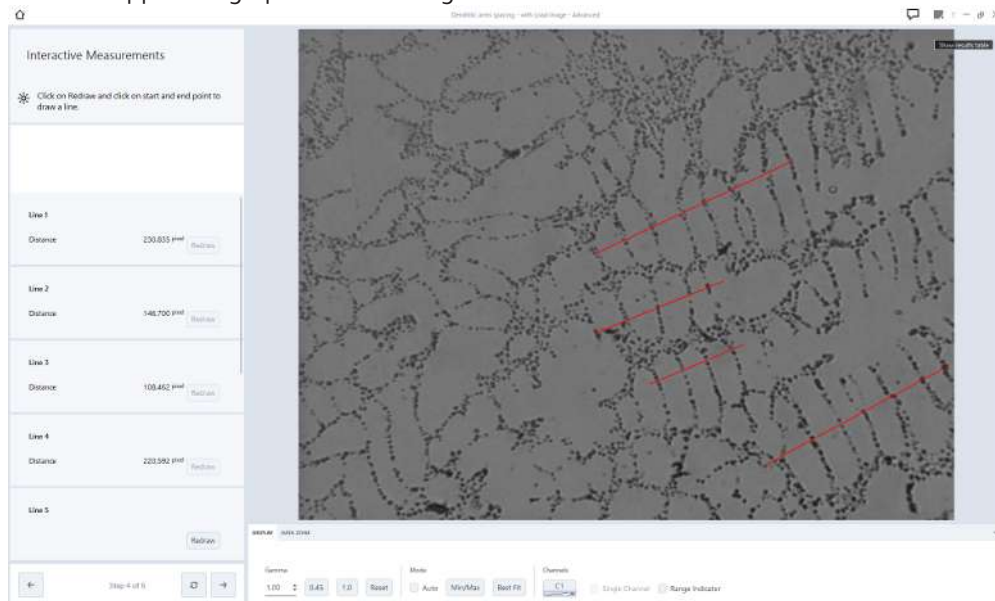


9. Click on  to continue with the next step.  
 → The **Load File** task is displayed.
10. Click on  and select an image.
11. Click on **Open** to load the image.  
 → The image is displayed.

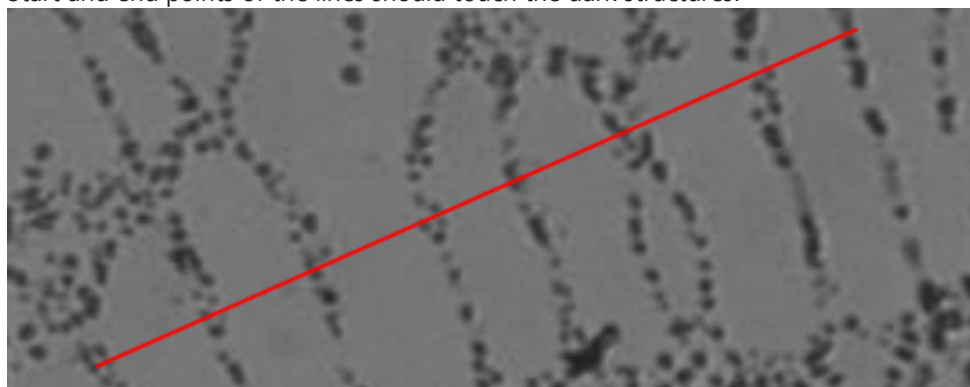


12. Click on  to continue with the next step.  
 → The **Interactive Measurement** task is displayed.
13. Click on **Redraw** and draw a line where start and end point touch the dark structures. Repeat this step for all dendrites to be measured.

→ The lines appear as graphics in the image.

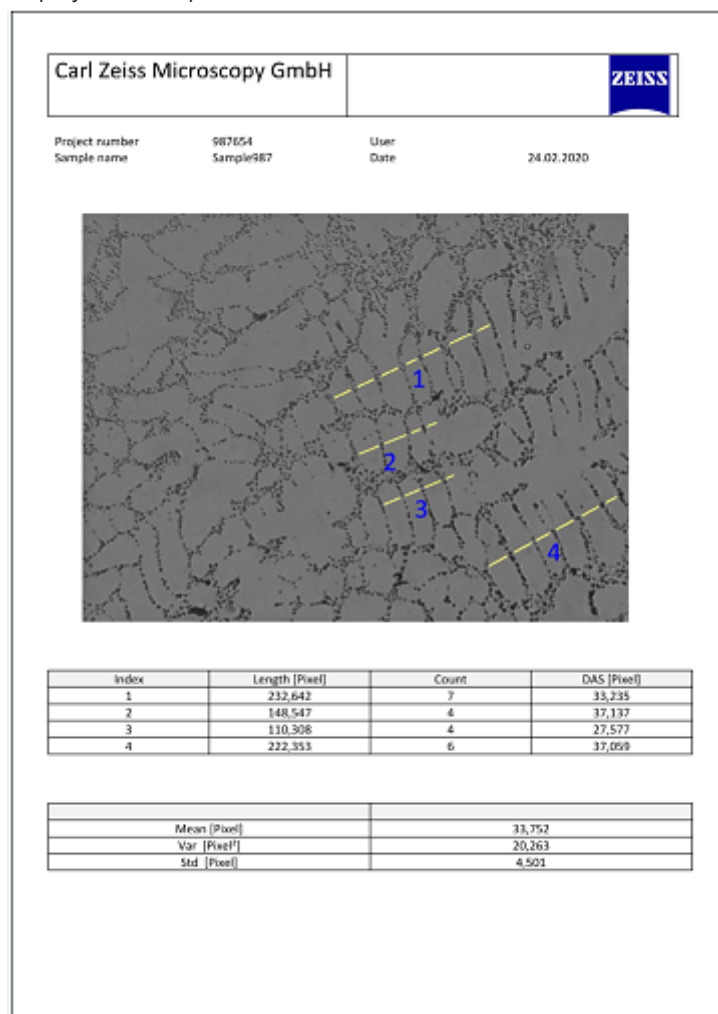


→ Start and end points of the lines should touch the dark structures.



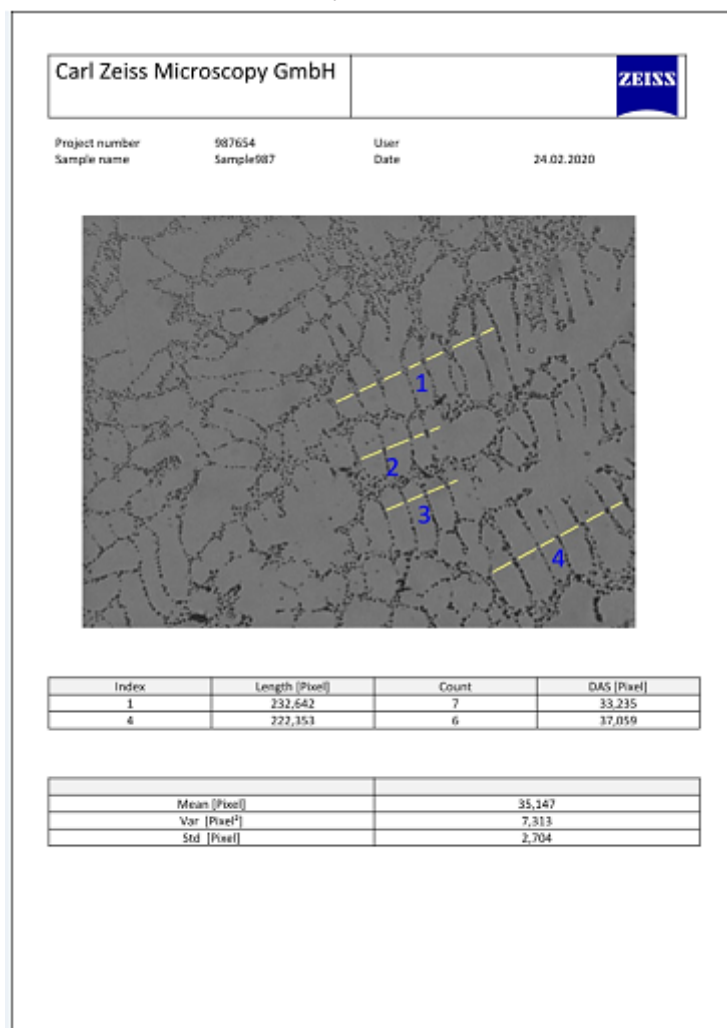
14. Click on  to continue with the next step.

- The results of all measurements (measured image, raw datatable, statistics datatable) are displayed in a report.



15. Click on  to continue with the next step.

- The results of measurements with minimum count 5 (measured image, raw datatable, statistics datatable) are displayed in a report.



16. Click on **Save and repeat** to save the results in the archive and to repeat the workflow for the next image.
  17. Click on **Save and Close** to save the results in the archive.
- The **Save Results** dialog appears.

Save Results

Name:  
Dendritic arms spacing - with Lead Image - Advanced

Save Cancel


18. Enter a name or use the default name and click on **Save**.
- The results have been saved under the defined **Name** in the archive.



## 9 Viewing Results


- Prerequisite** ✓ You have executed one of the following jobs:
- **Dendritic arms spacing - with Load image**
  - **Dendritic arms spacing - with Acquire image**
  - **Dendritic arms spacing - with Load image - Advanced**
  - **Dendritic arms spacing - with Acquire image - Advanced**
- ✓ The results have been saved in the archive.

1. Click on **Browse Results**.
2. Select your job in **Results**.

Results			
NAME	CREATED	DESCRIPTION	LAST MODIFIED
 Dendritic arms spacing - with Load image	24.02.2020 13:24:51	Note! You have to setup Manage Features for Graphical Elements for Line); Only the feature Distance should be activated (as available only)!	24.02.2020 13:32:11

→ All **Result Documents** of the selected job are displayed in the **Preview**.

### Preview



Title Dendritic arms spacing - with Load image

File Name Dendritic arms spacing - with Load image.czjob

Created 24.02.2020 13:24:51

Description Note! You have to setup Manage Features for Graphical

Last Modified 24.02.2020 13:32:11

Rating 0


Created (File) 24.02.2020 13:32:11

Last Access (File) 24.02.2020 13:32:11

File Size 142,73 kB








File Type CZJOB

Job Category DAS


3. Click on  to export the job results in a folder.

4. Select one of the **Result Documents** of the selected job.

### Result Documents

NAME	COMMENT	CREATED	LAST MODIFIED	MICROSCOPE NAME
 Bild-OAD Macros-01		24.02.2020 13:32:10	24.02.2020 13:32:10	
 DAS Report 1image 1data table statistics		24.02.2020 13:32:11	24.02.2020 13:32:11	
 demoDAS		24.02.2020 13:32:10	24.02.2020 13:32:10	
 OAD Form1		24.02.2020 13:32:10	24.02.2020 13:32:10	
 Tabelle-01		24.02.2020 13:32:10	24.02.2020 13:32:10	
 Tabelle-02		24.02.2020 13:32:10	24.02.2020 13:32:10	
 ZEISS Form 1		24.02.2020 13:32:10	24.02.2020 13:32:10	

5. Click on  to view the selected document.

6. Click on  to leave the **Browse Results** mode.

The results of the processed and saved job have been viewed.



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