

Run-03 series

Sample: A-1-1 (3.9ϕ x 3h: 85.85 mg)

obsidian from Wada-toge

Heating temperature: 850°C

Heating duration: 0-50 min

051120a: 0 min

051120b: 5 min

051120c: 10 min

051120d: 15 min

051120e: 20 min

051120f: 25 min

051120g: 30 min

051120h: 35 min

051120i: 40 min

051120jk: 45 min

051120lm: 50 min

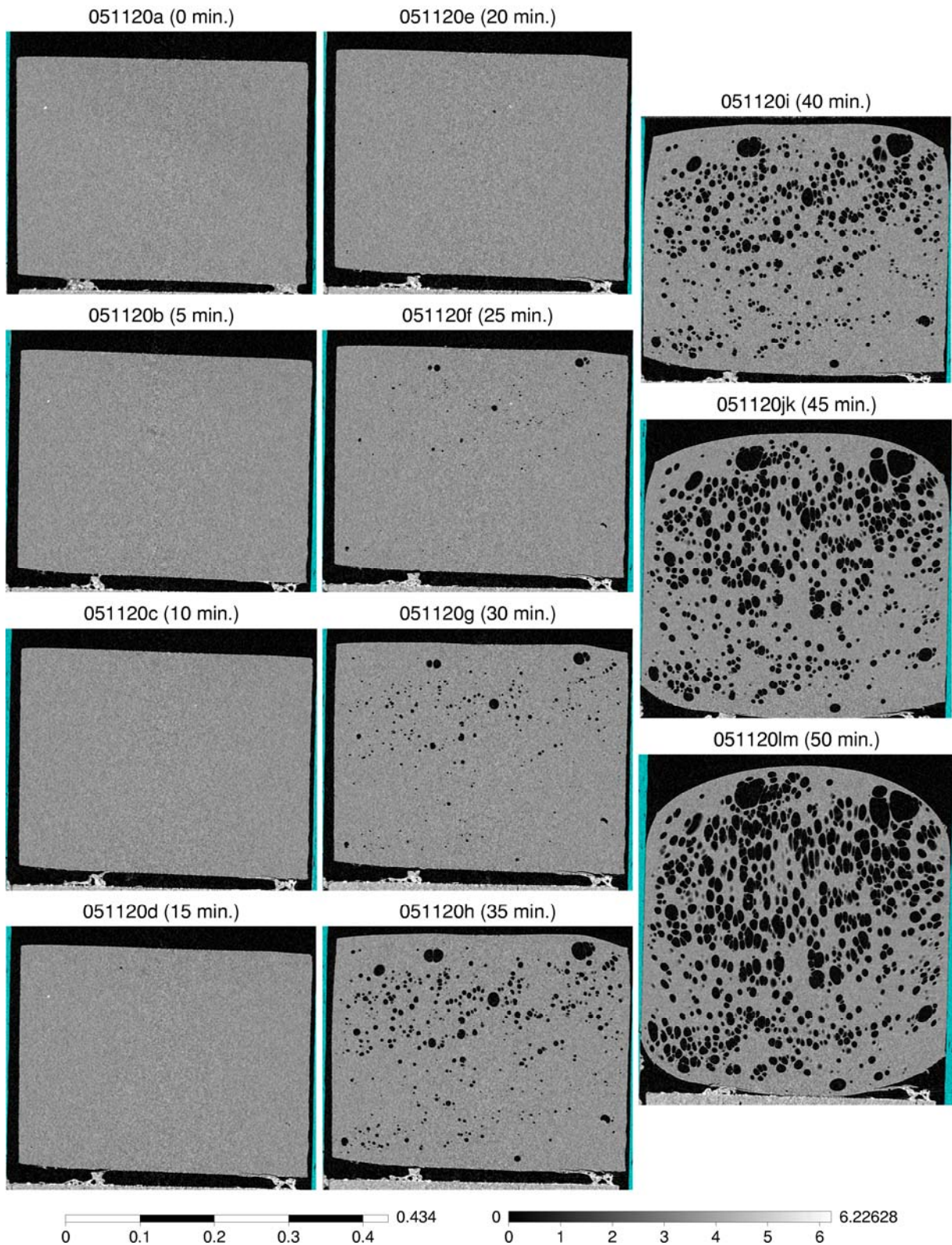
E = 25 keV

0.8 sec/projection

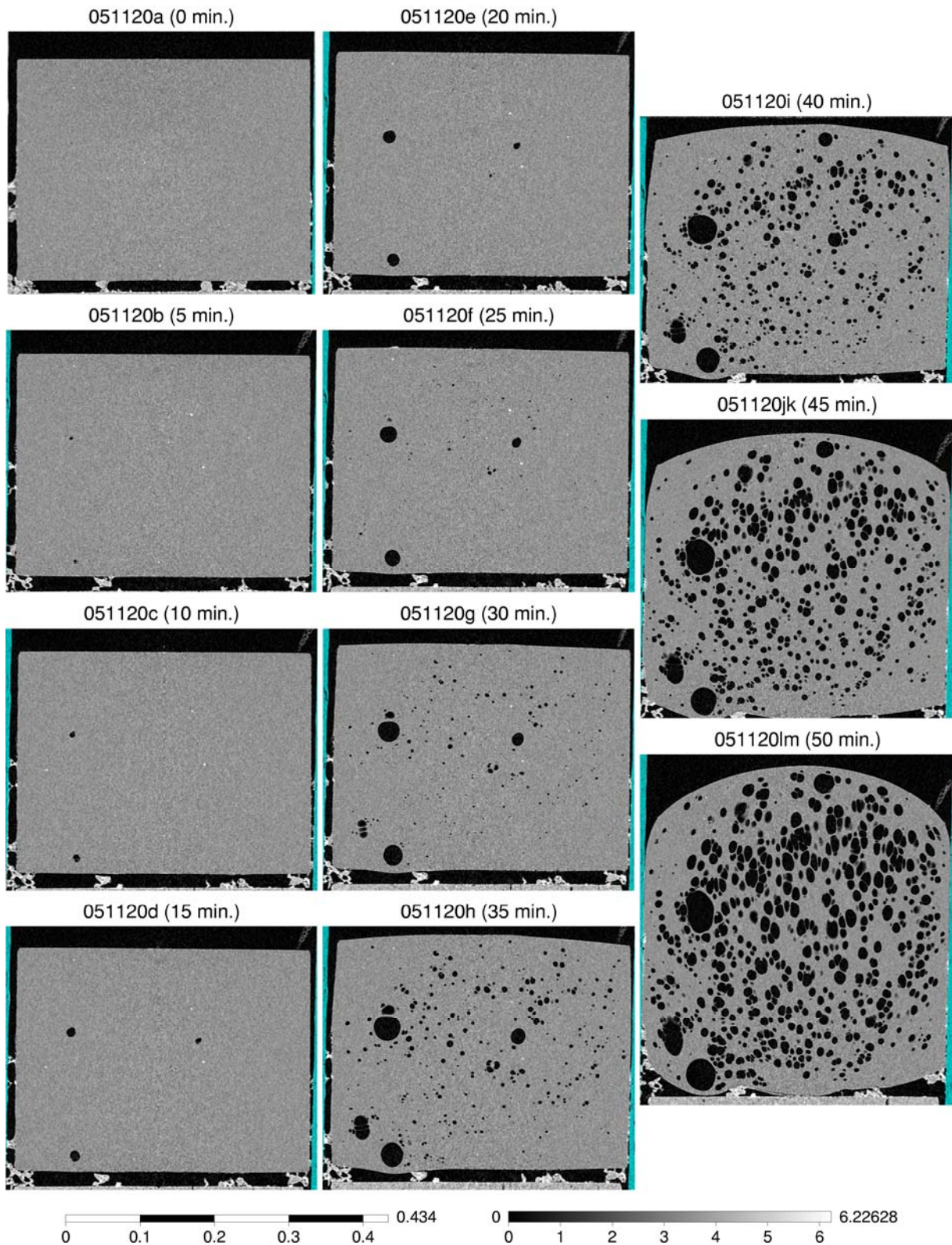
Projection: 750

pixel size: 4.34 μm

A-1-1 Run-03 series 850°C/0-50min (051120a-m) X-slices

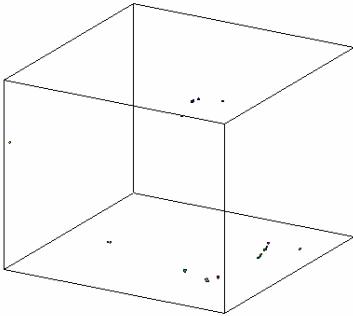


A-1-1 Run-03 series 850°C/0-50min (051120a-m) Y-slices

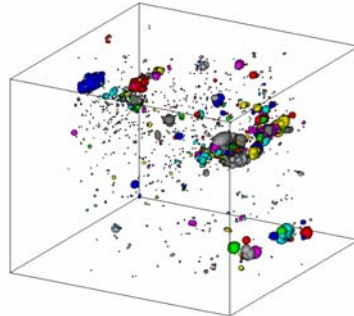


A-1-1 Run-03 series 850°C/0-50min (051120a-m) voids

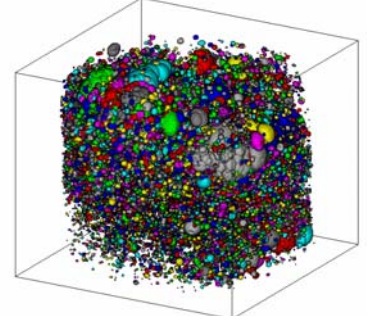
051120a (0min)



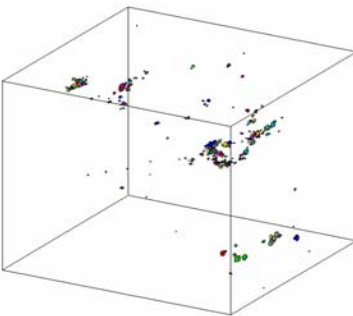
051120e (20min)



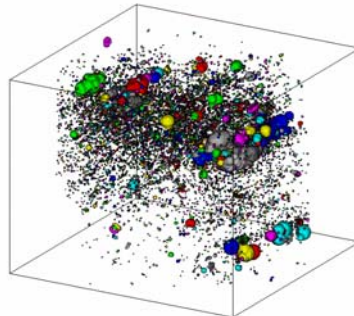
051120i (40min)



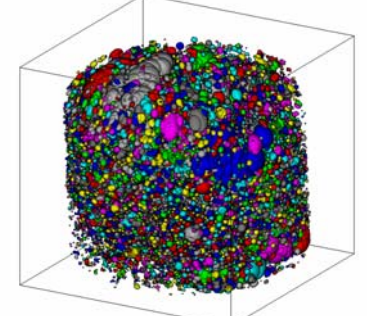
051120b (5min)



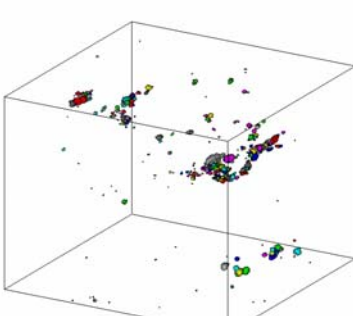
051120f (25min)



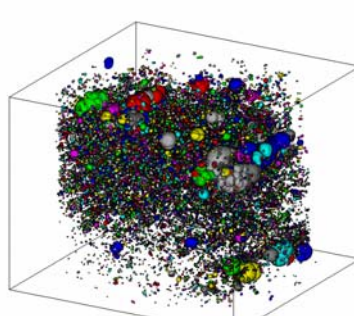
051120jk (45min)



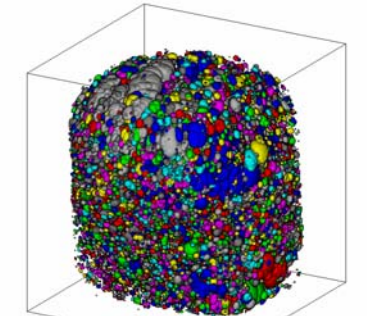
051120c (10min)



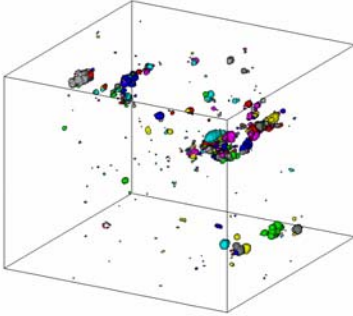
051120g (30min)



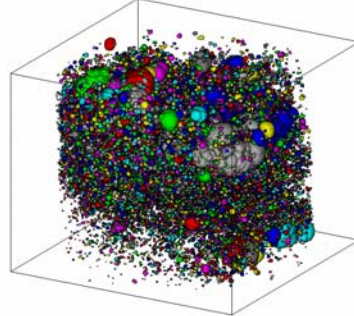
051120lm (50min)



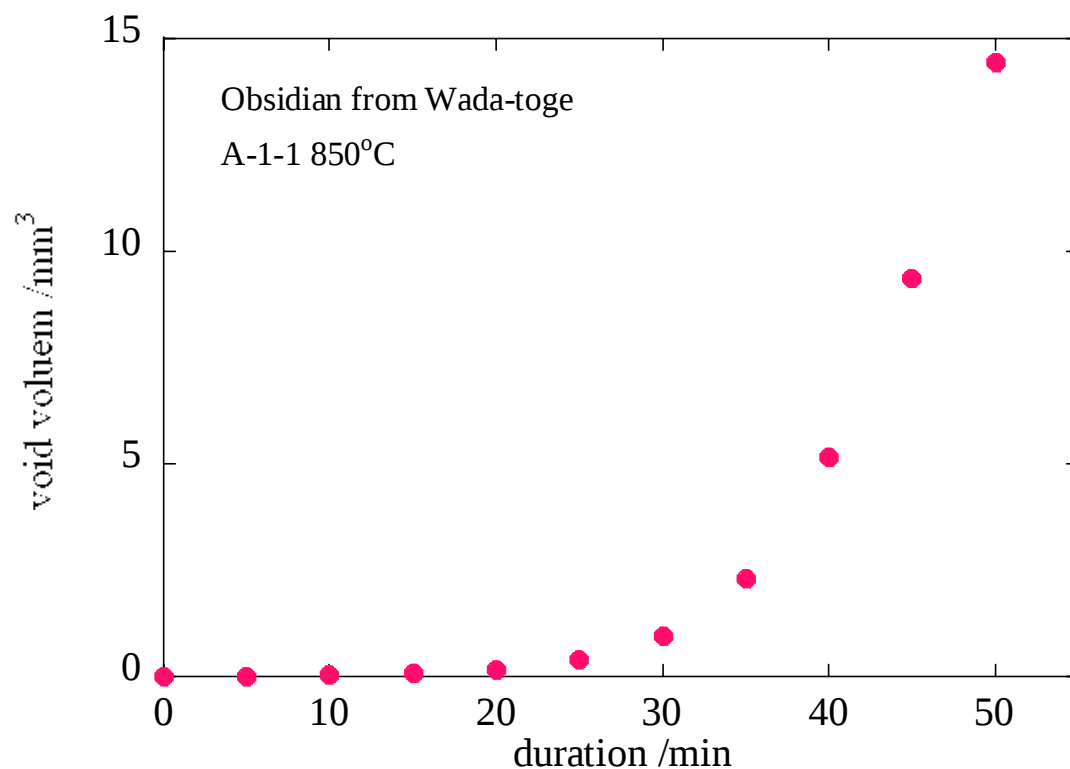
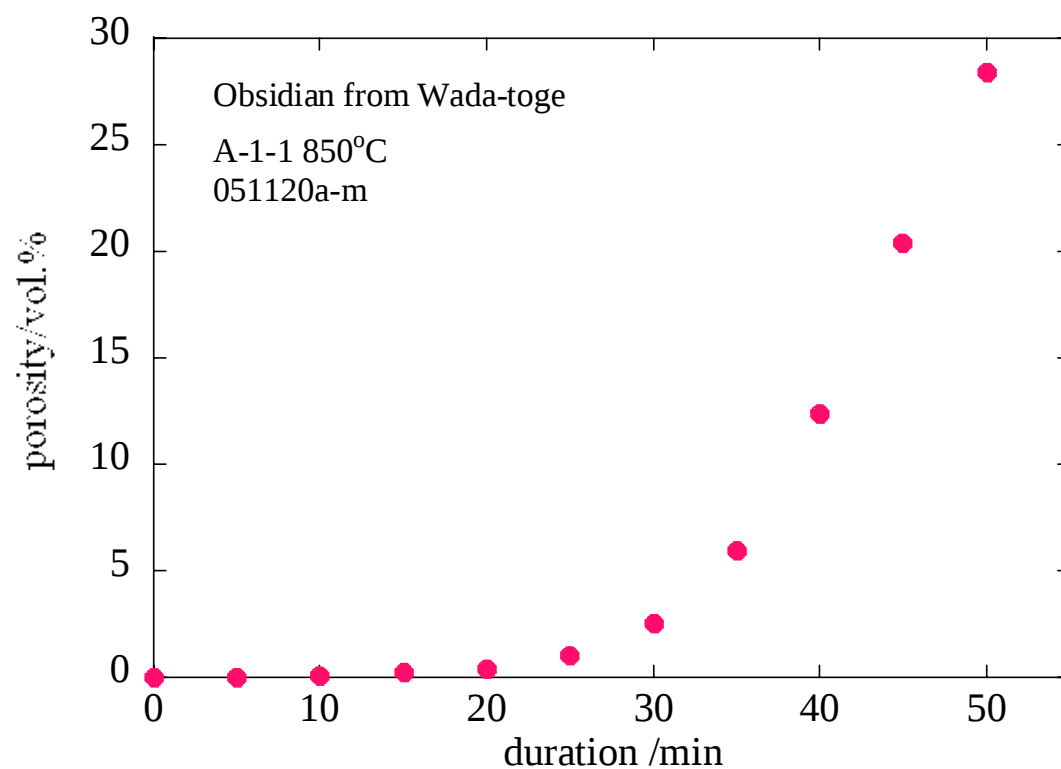
051120d (15min)



051120h (35min)

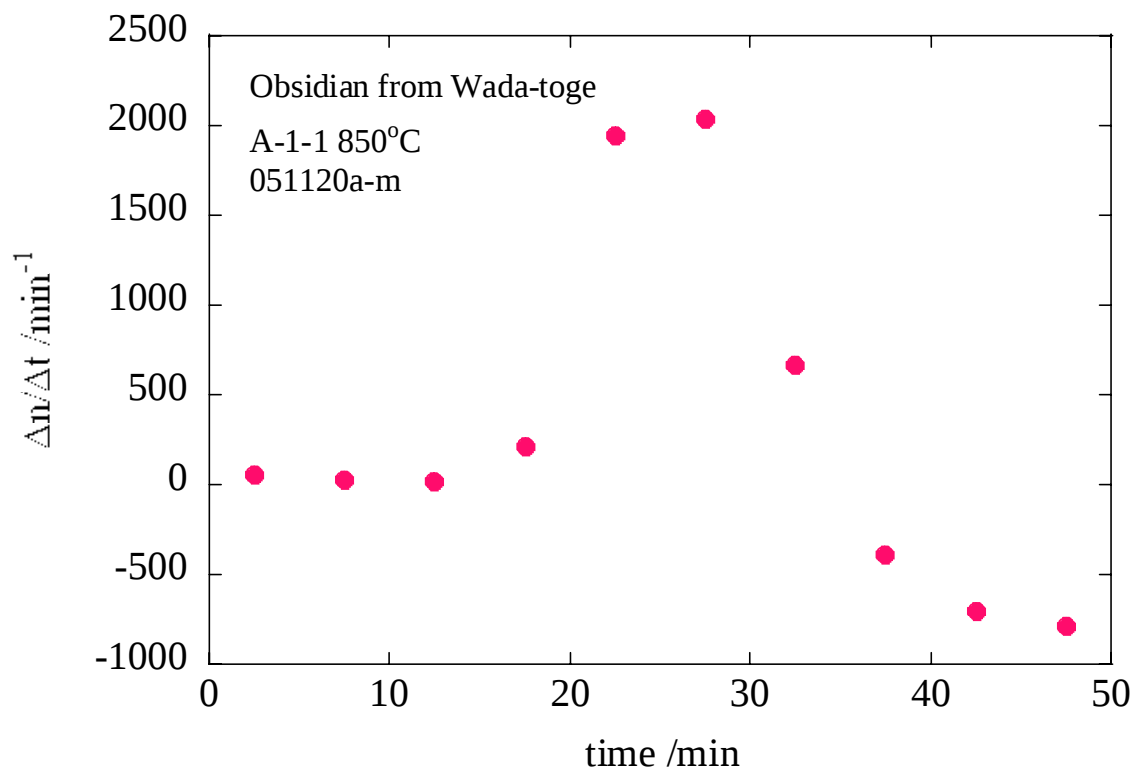
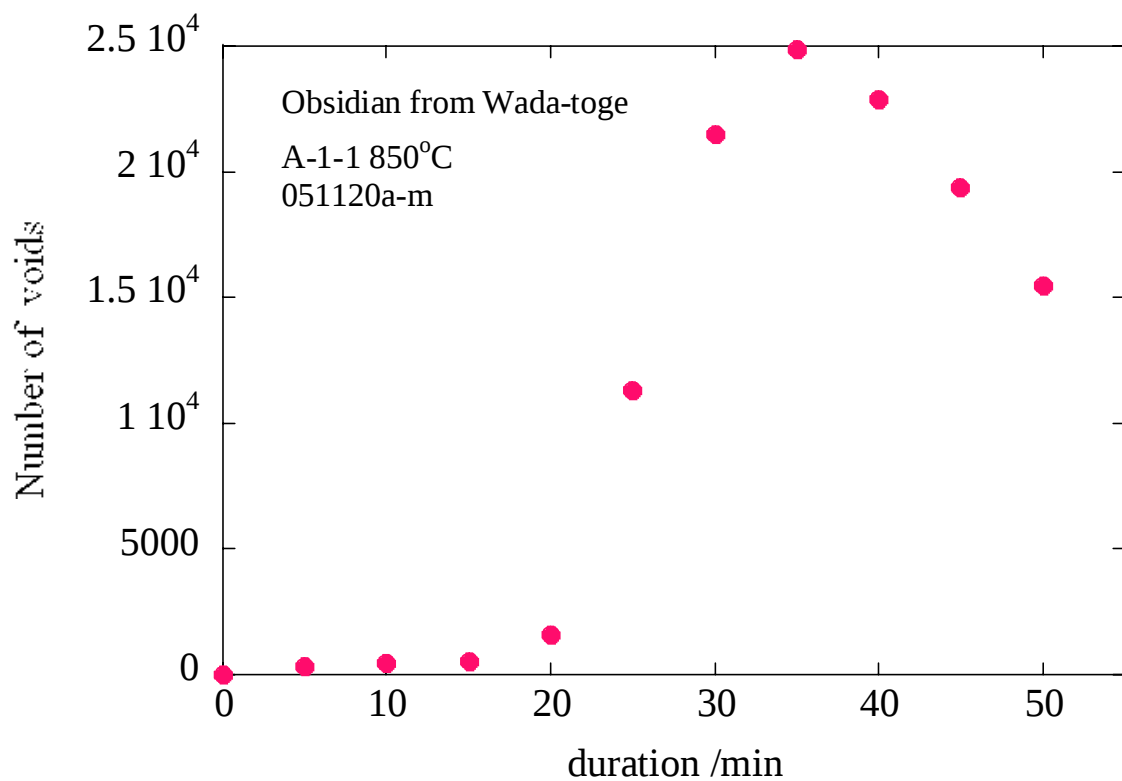


A-1-1 Run-03 series 850°C/0-50min (051120a-m) porosity and void volume



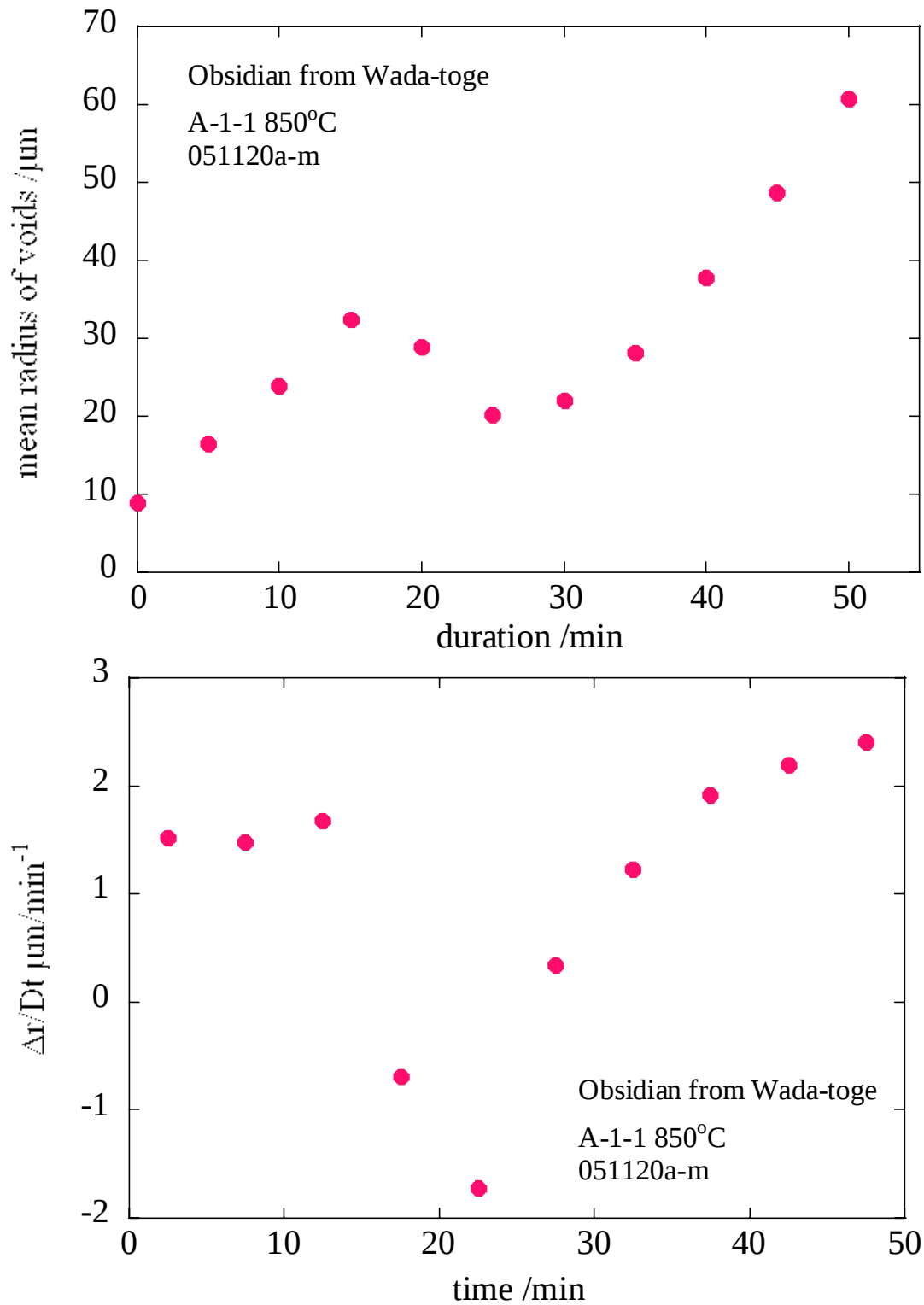
A-1-1 Run-03 series 850°C/0-50min (051120a-m)

Number of voids, n, and nucleation rate

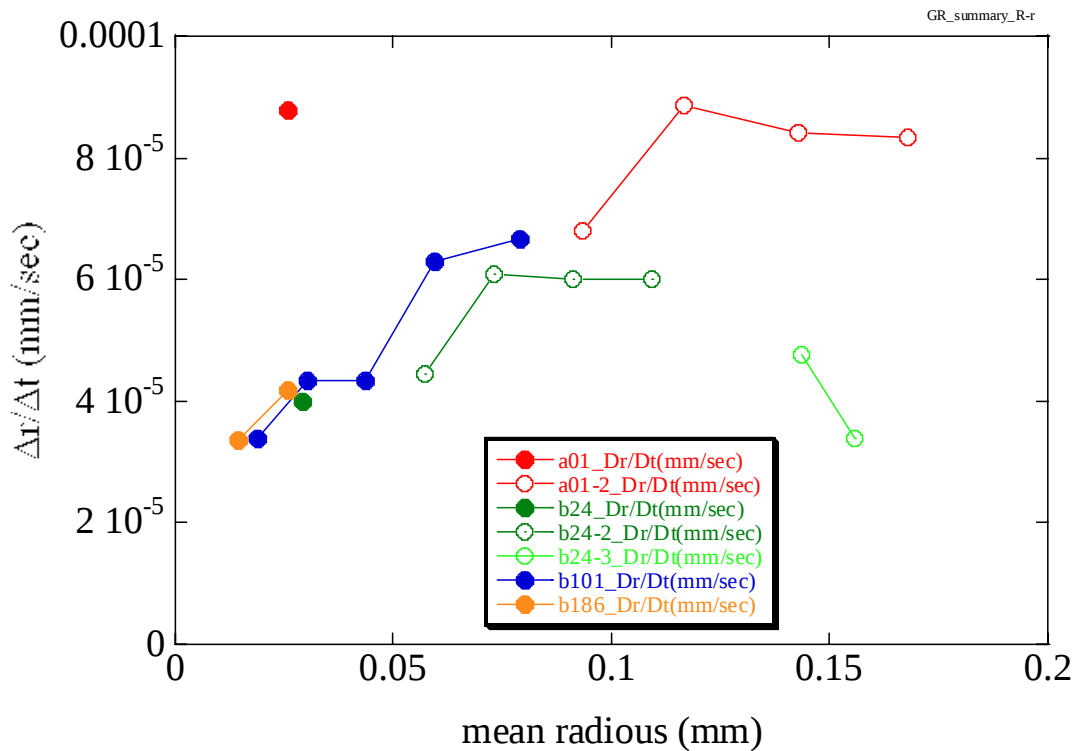
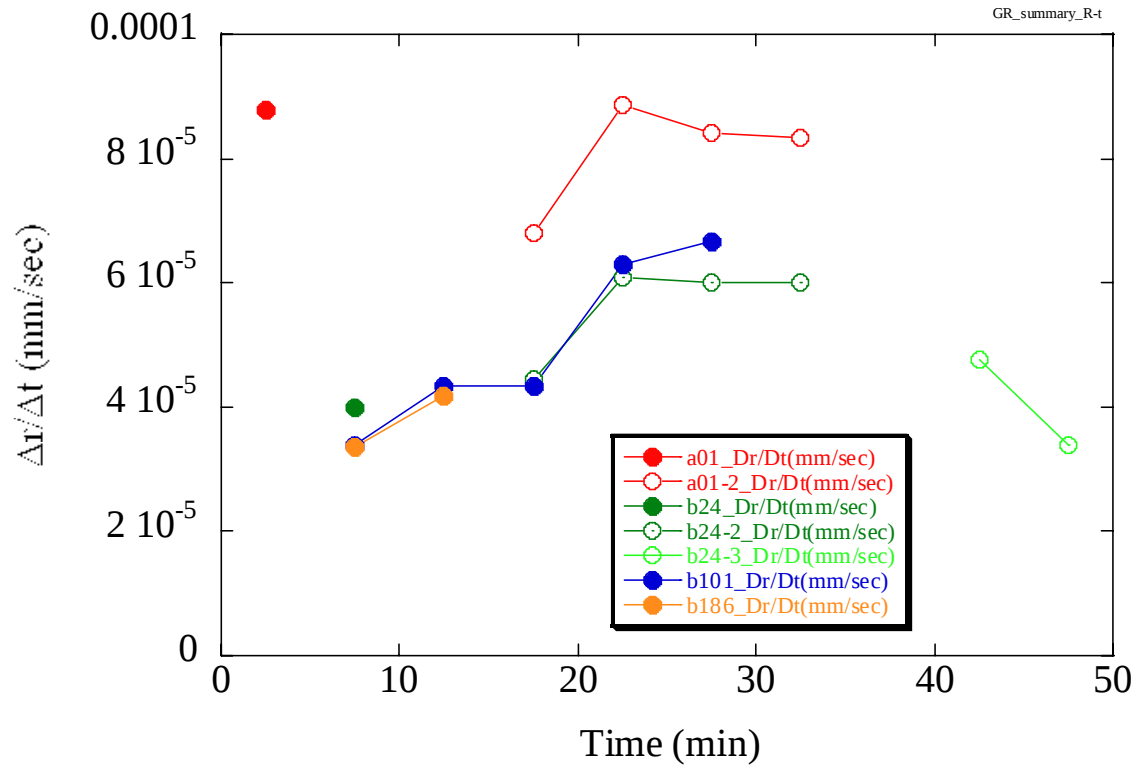


A-1-1 Run-03 series 850°C/0-50min (051120a-m)

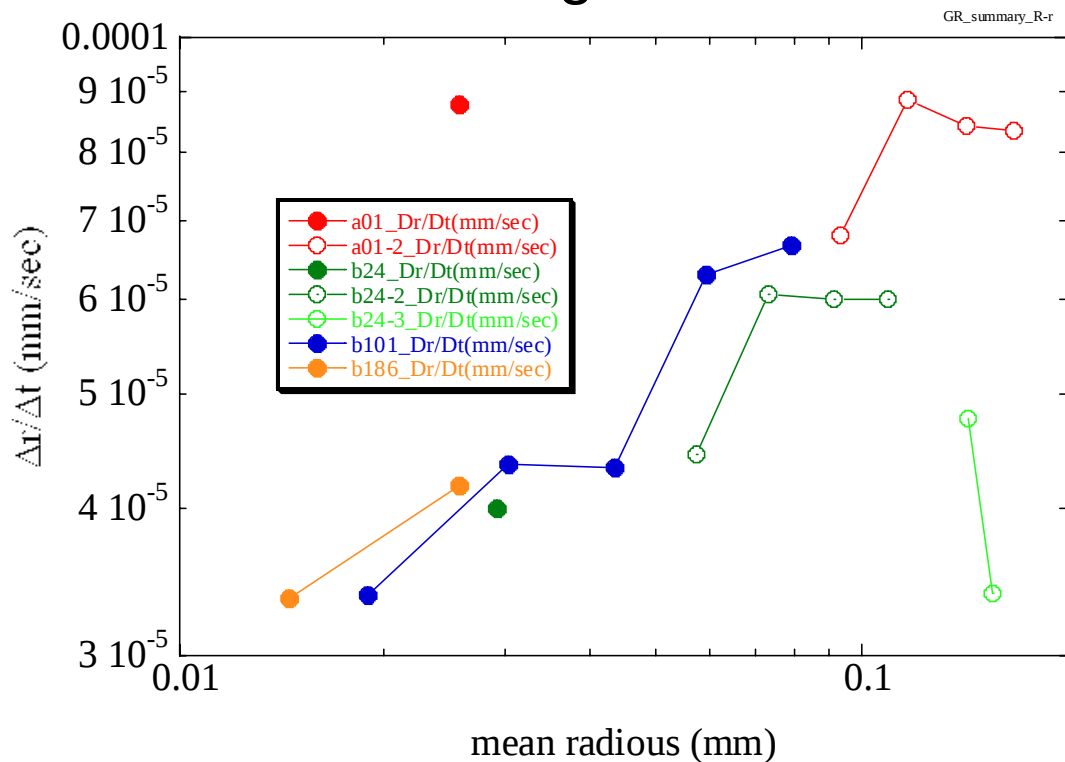
mean void radius, r , and growth rate



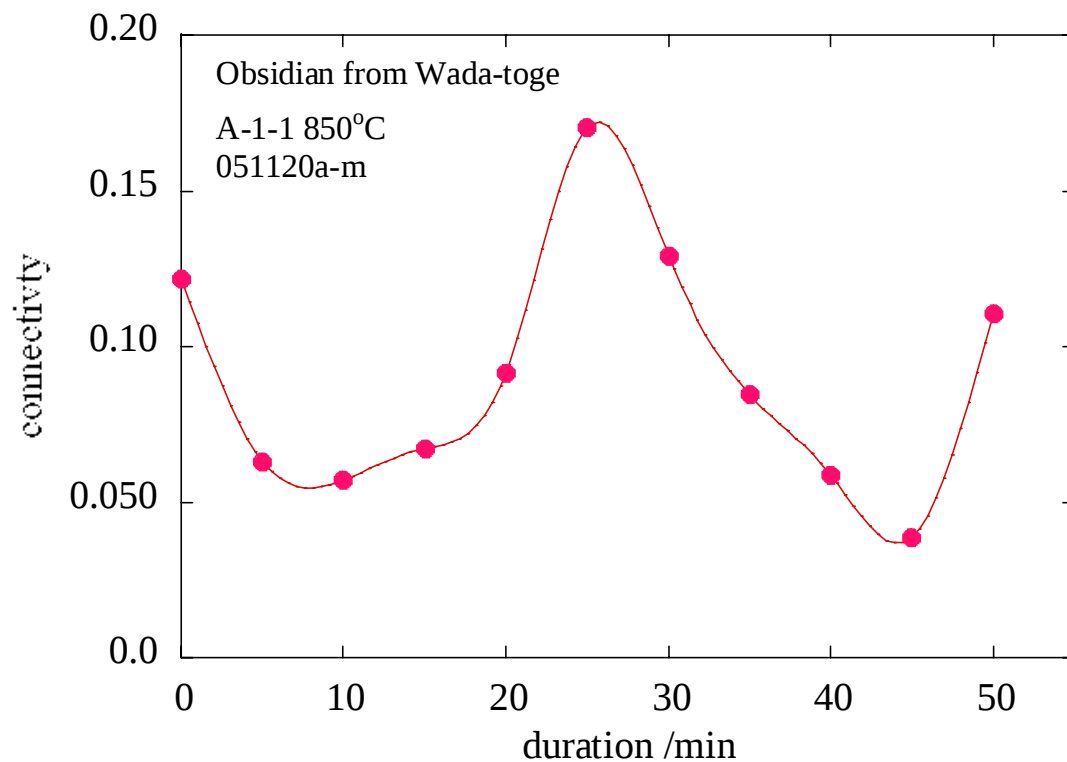
A-1-1 Run-03 series 850°C/0-50min (051120a-m) individual growth rates



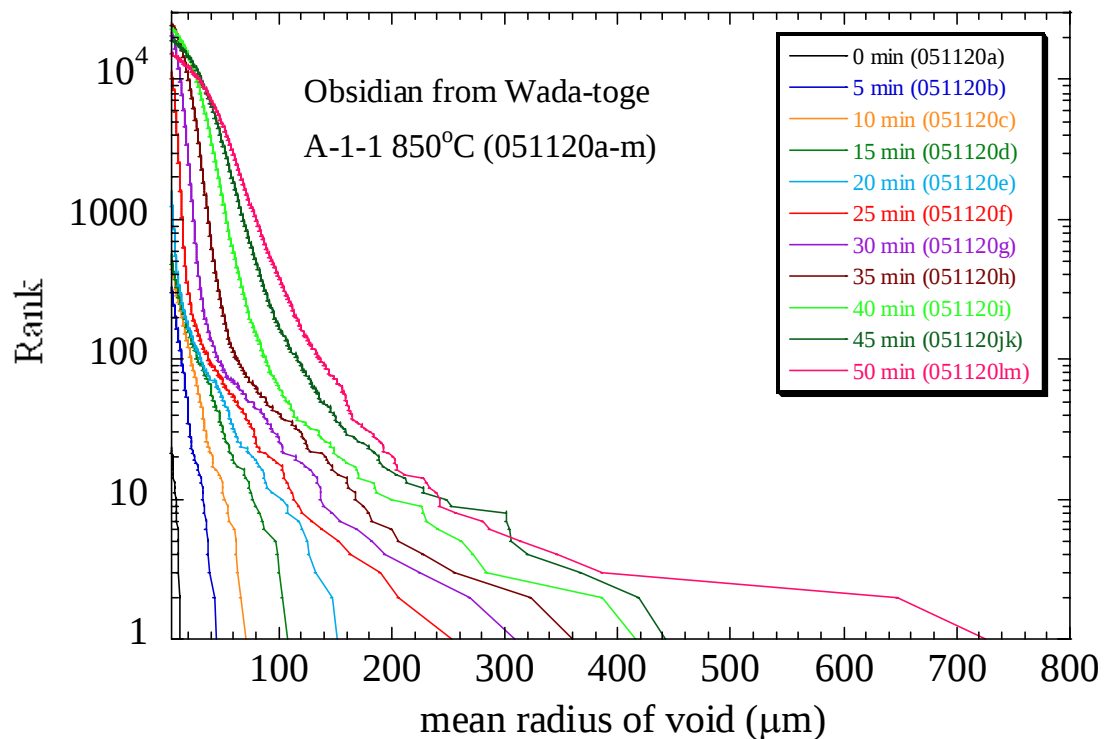
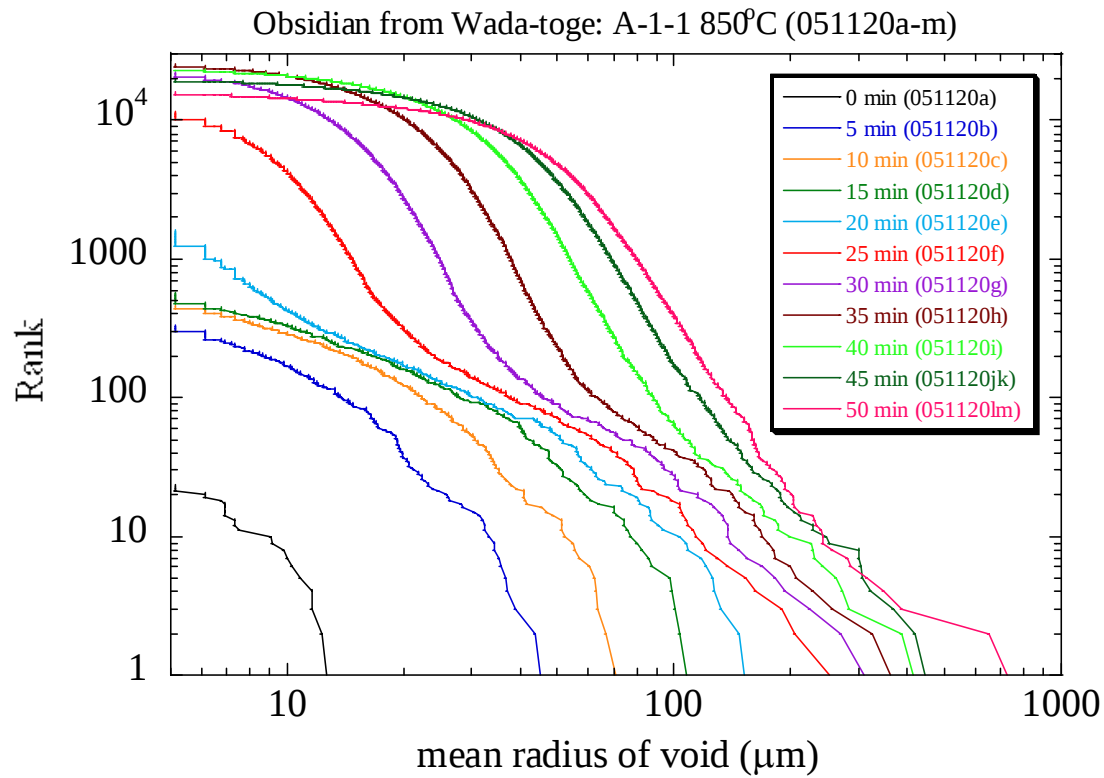
A-1-1 Run-03 series 850°C/0-50min (051120a-m) individual growth rate



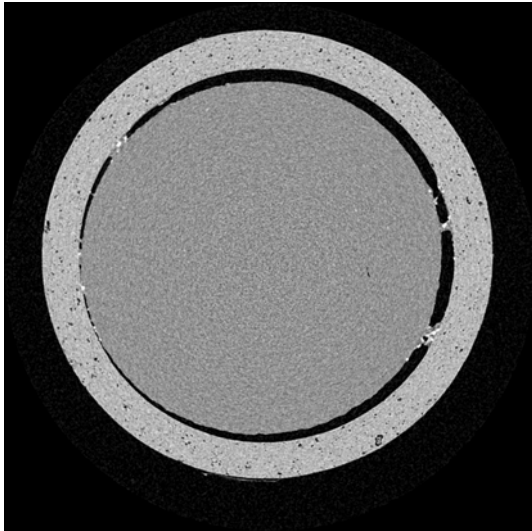
connectivity



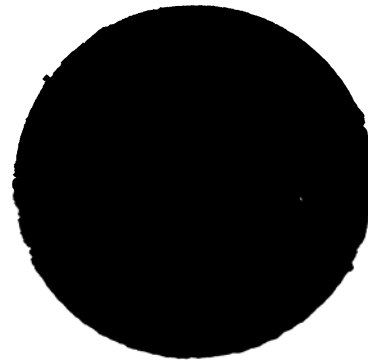
A-1-1 Run-03 series 850°C/0-50min (051120a-m) size distribution



051120a



byte/713.tif (width: 5.833 mm)



MHL_cm_gif/713.gif (width: 5.833 mm)

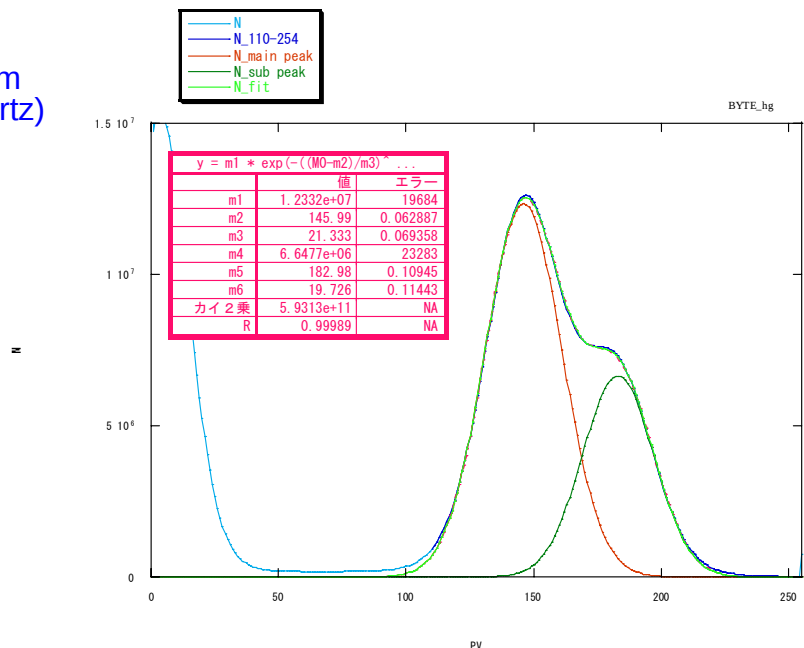
Imaging No.: 051120a
 Sample: A-1-1 Run-03-0 850°C/0 min
 Beamline: BL20B2
 X-ray photon energy: 25 keV
 Exposure time for each projection: 0.8 sec.
 No. of pixels for each projection image: 1344 × 816 pels

No. of projection images for dark current : 2 (1 each before and after sample imaging)
 No. of projection images for incident beam current (I_0): 151 (+1; for determining the rotation axis)
 No. of projection images for transmitted beam current (I): 750 (+1; ditto)
 Imaging sequence: One I_0 imaging after every 5 I imaging
 Pixel size of projection images: 4.34 micron

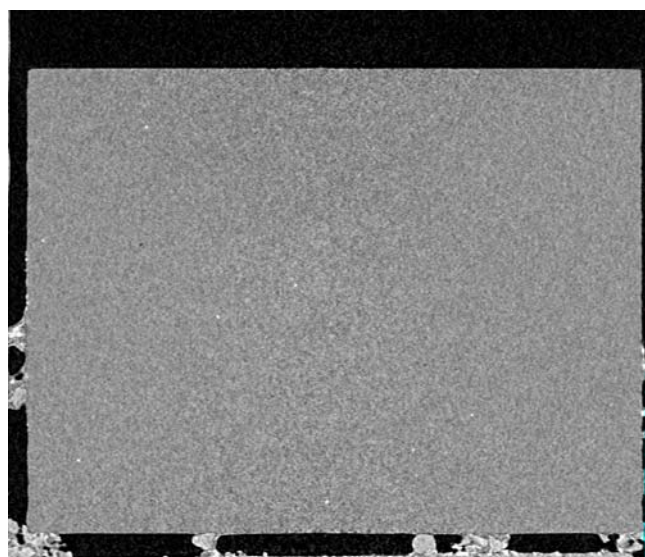
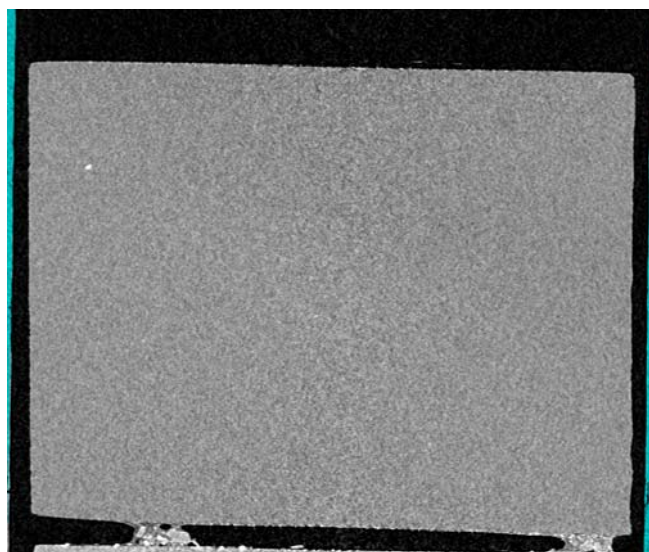
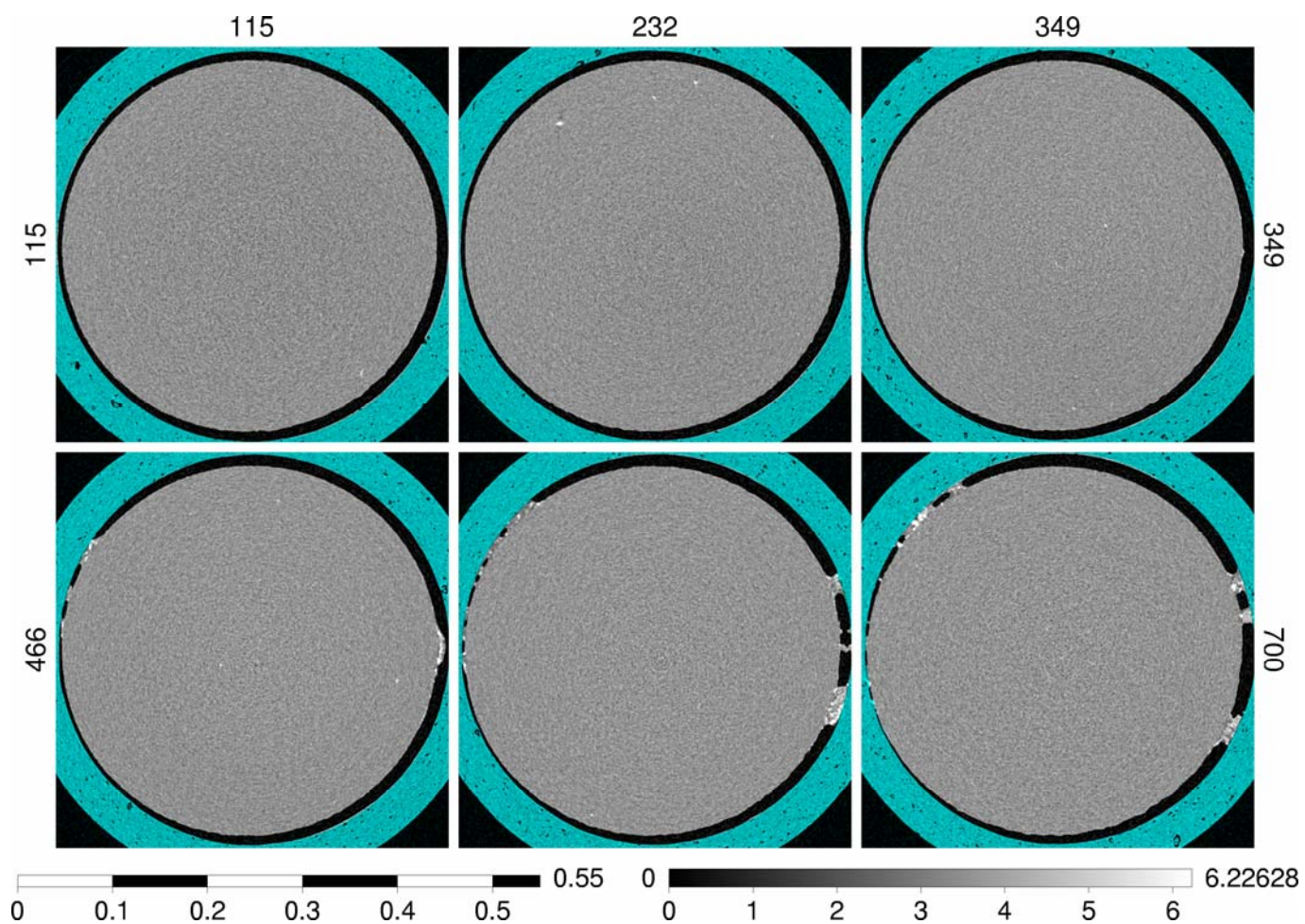
Voxel size of reconstructed CT images: 4.34 micron
 No. of voxels: 1344 × 1344 × 816
 Location of sample rotation axis: $z \times 0.000813 + 672.508215 \pm 0.14173$ (z=0~815)

Byte images:
 PV=0: CT value = 0 1/cm
 PV=150: CT value = 3.66252 1/cm
 (theoretical LAC of quartz)

Ternary images:
 Threshold for obsidian: PV=73
 Threshold for obsidian: PV=165

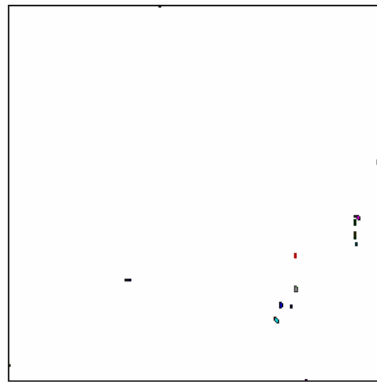


A-1-1 Run-03-0 850°C/0min
(051120a): browse image

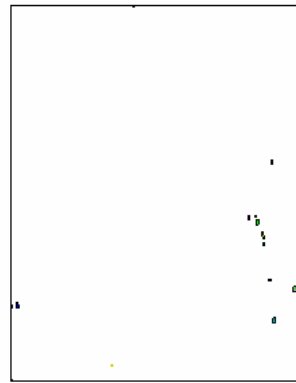


A-1-1 Run-03-0 850°C/0min (051120a): voids

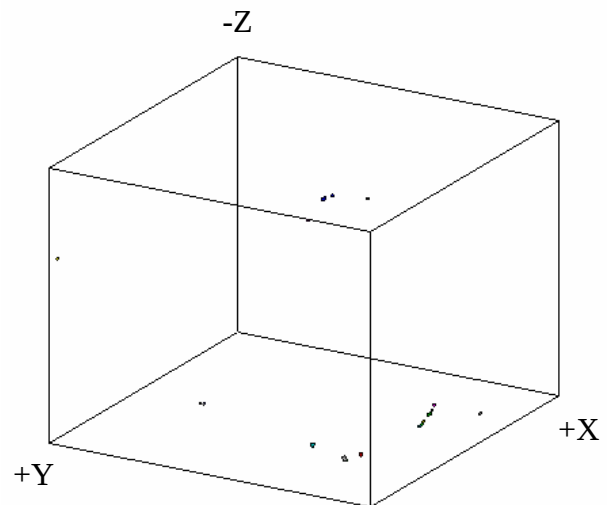
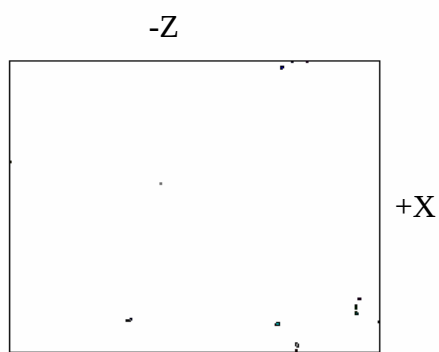
-Z image



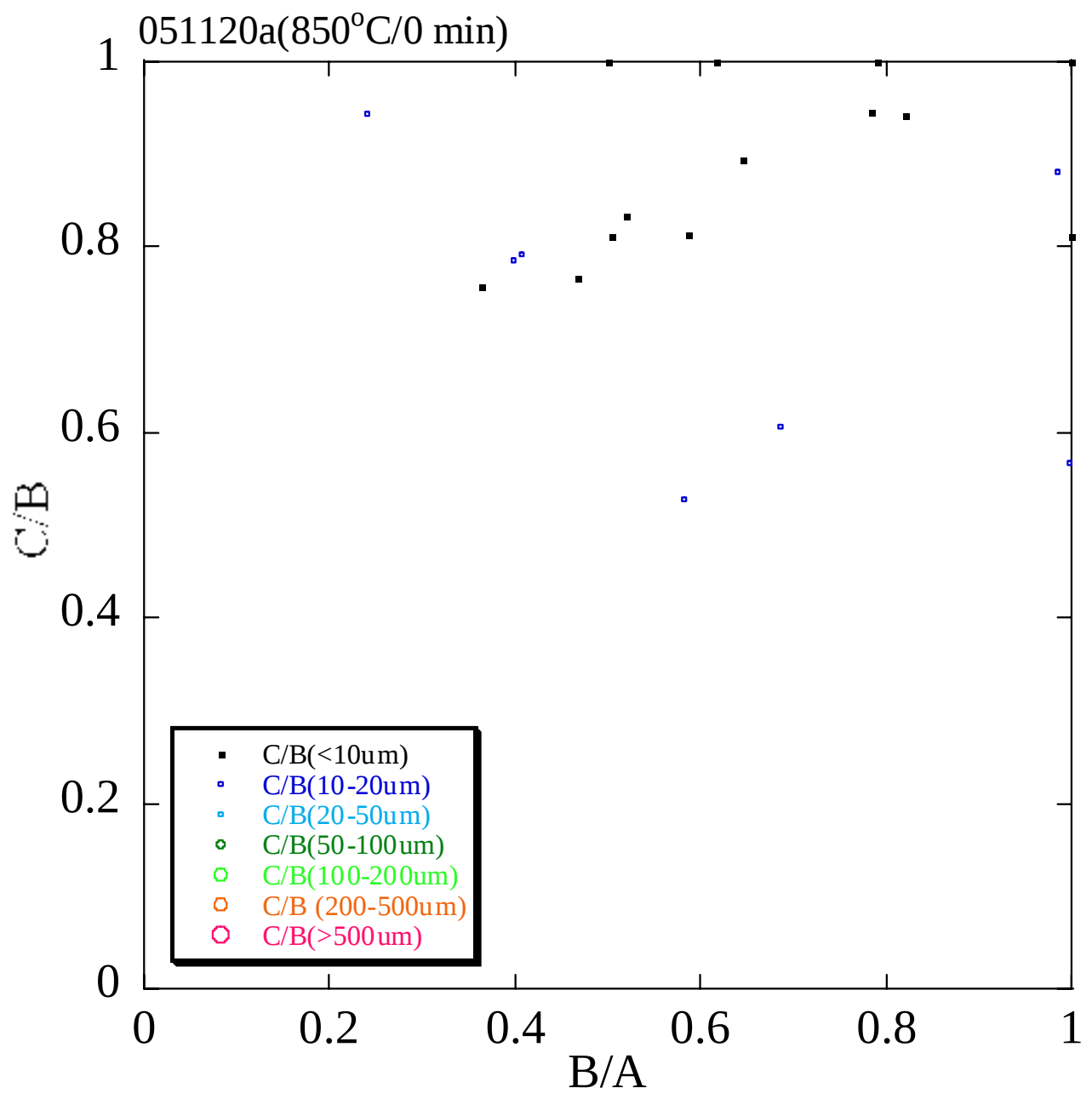
+X image



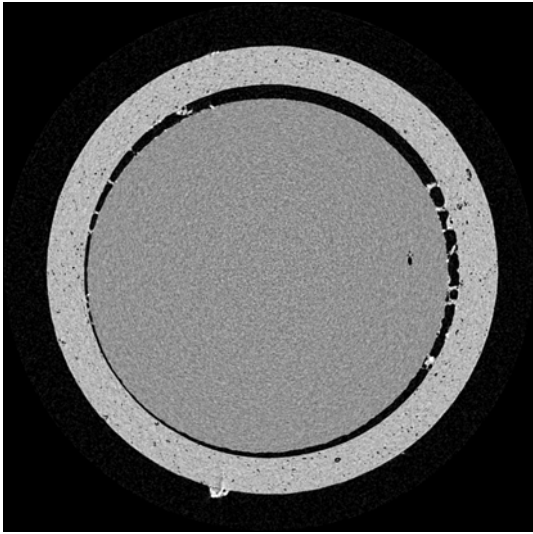
+Y image



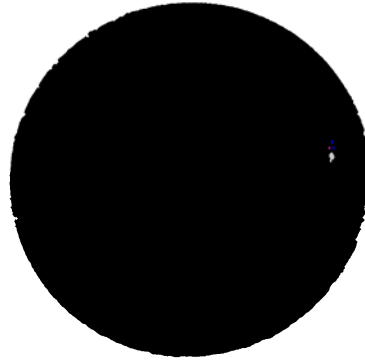
A-1-1 Run-03-0 850°C/0min (051120a): void shape



051120b



byte/713.tif (width: 5.833 mm)



MHL_cm_gif/655.gif (width: 5.833 mm)

Imaging No.: 051120b

Sample: A-1-1 Run-03-1 850°C/5 min

Beamline: BL20B2

X-ray photon energy: 25 keV

Exposure time for each projection: 0.8 sec.

No. of pixels for each projection image: 1344 × 816 pels

No. of projection images for dark current : 2 (1 each before and after sample imaging)

No. of projection images for incident beam current (I_0): 151 (+1; for determining the rotation axis)

No. of projection images for transmitted beam current (I): 750 (+1; ditto)

Imaging sequence: One I_0 imaging after every 5 I imaging

Pixel size of projection images: 4.34 micron

Voxel size of reconstructed CT images: 4.34 micron

No. of voxels: 1344 × 1344 × 816

Location of sample rotation axis: $z \times 0.000144 + 673.920429 \pm 0.090347$ ($z=0 \sim 815$)

Byte images:

PV=0: CT value = 0 1/cm

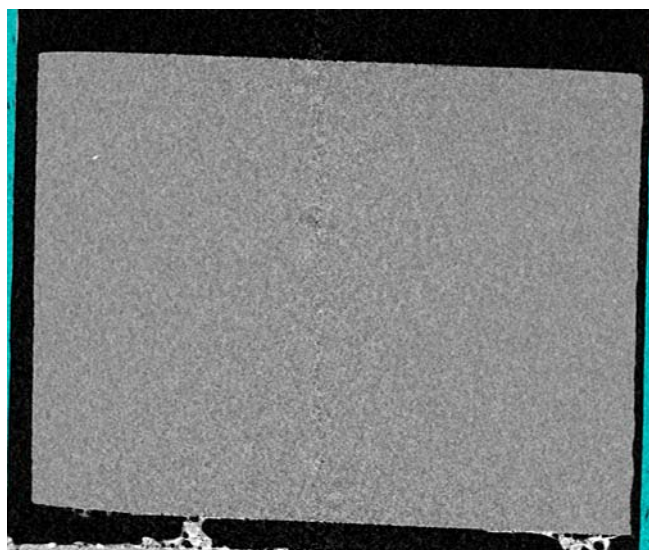
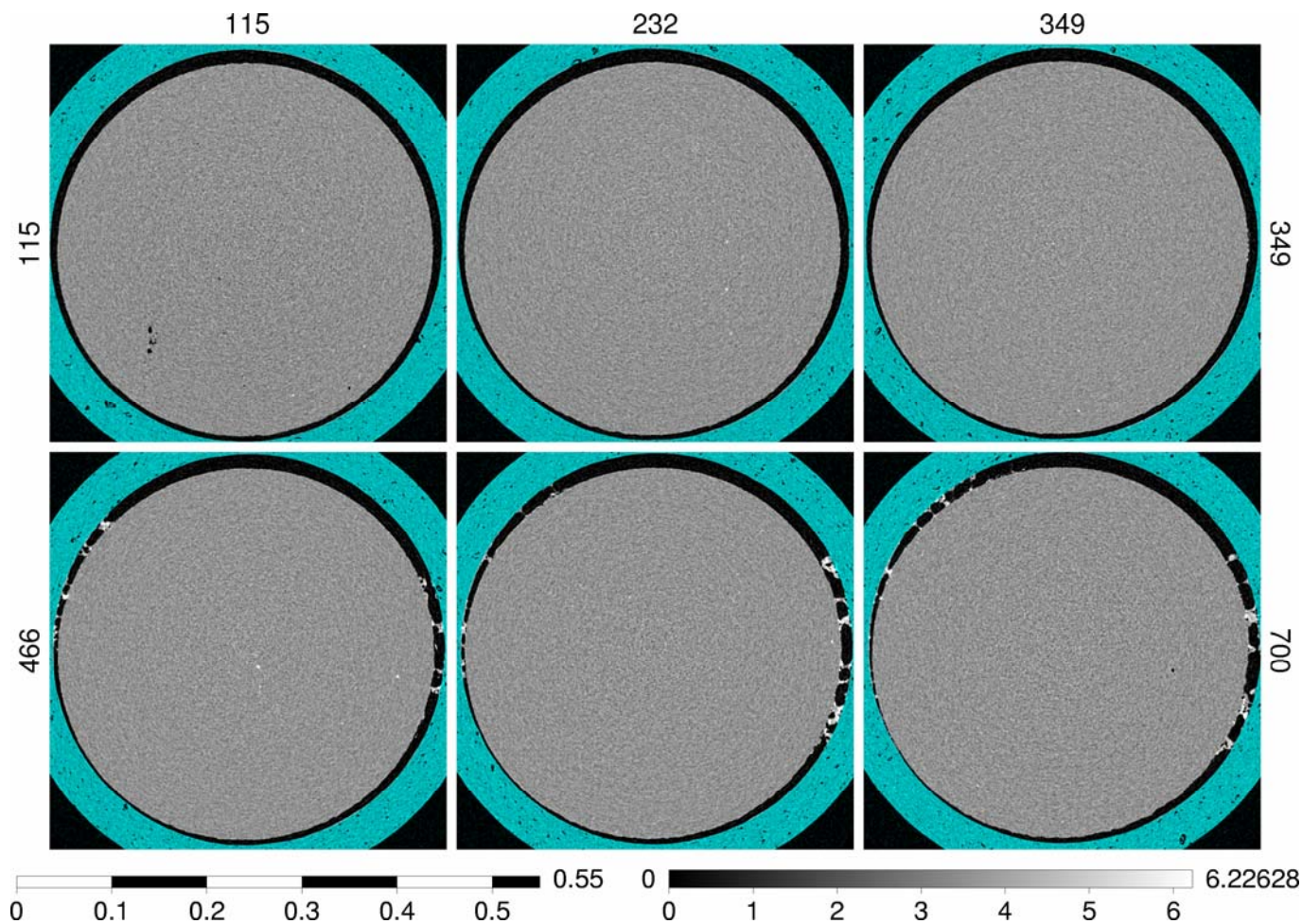
PV=150: CT value = 3.66252 1/cm
(theoretical LAC of quartz)

Ternary images:

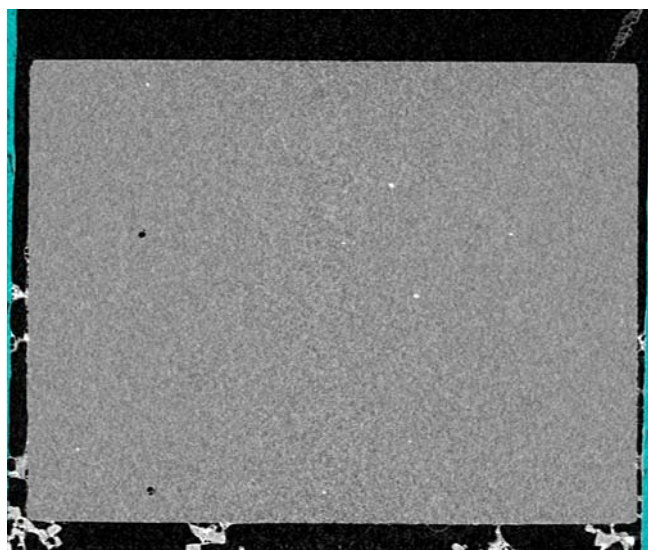
Threshold for obsidian: PV=73

Threshold for obsidian: PV=165

A-1-1 Run-03-1 850°C/5min
(051120b): browse image



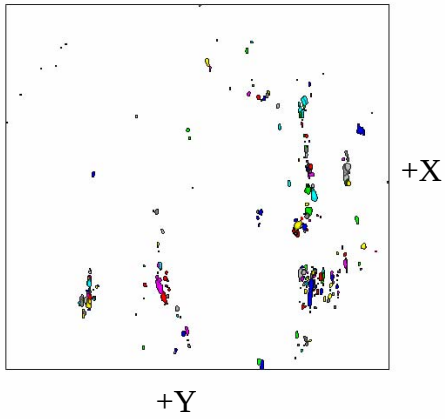
X-slice



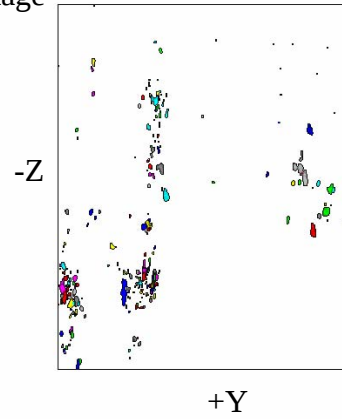
Y-slice

A-1-1 Run-03-1 850°C/5min (051120b): voids

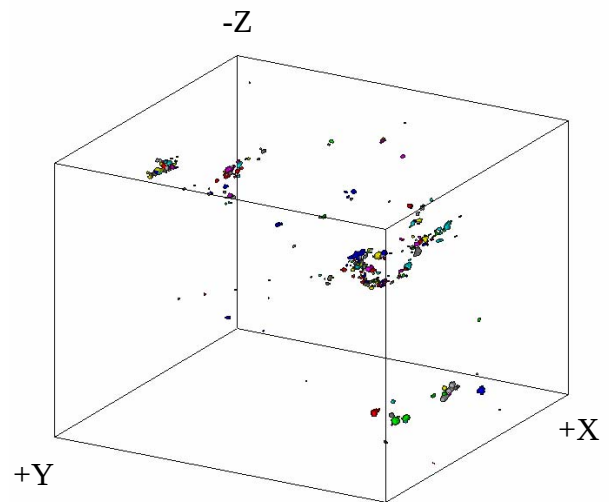
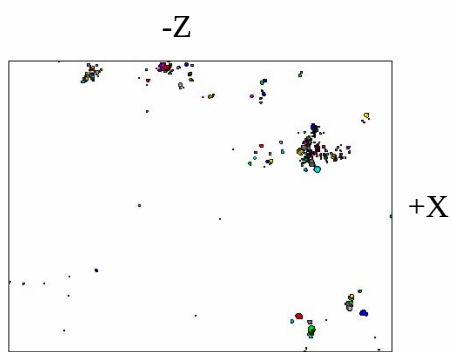
-Z image



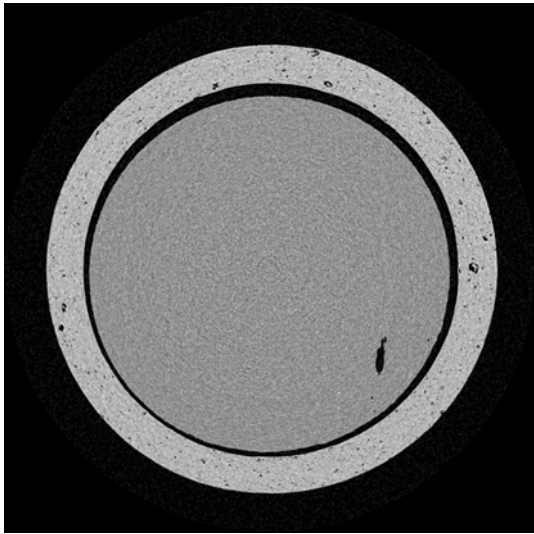
+X image



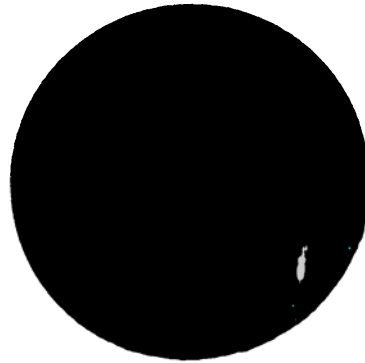
+Y image



051120c



byte/236.tif (width: 5.833 mm)



MHL_cm_gif/236.gif (width: 5.833 mm)

Imaging No.: 051120c

Sample: A-1-1 Run-03-2 850°C/10 min

Beamline: BL20B2

X-ray photon energy: 25 keV

Exposure time for each projection: 0.8 sec.

No. of pixels for each projection image: 1344 × 816 pels

No. of projection images for dark current : 2 (1 each before and after sample imaging)

No. of projection images for incident beam current (I_0): 151 (+1; for determining the rotation axis)

No. of projection images for transmitted beam current (I): 750 (+1; ditto)

Imaging sequence: One I_0 imaging after every 5 I imaging

Pixel size of projection images: 4.34 micron

Voxel size of reconstructed CT images: 4.34 micron

No. of voxels: 1344 × 1344 × 816

Location of sample rotation axis: $z \times 0.000694 + 673.073865 \pm 0.163748$ ($z=0 \sim 815$)

Byte images:

PV=0: CT value = 0 1/cm

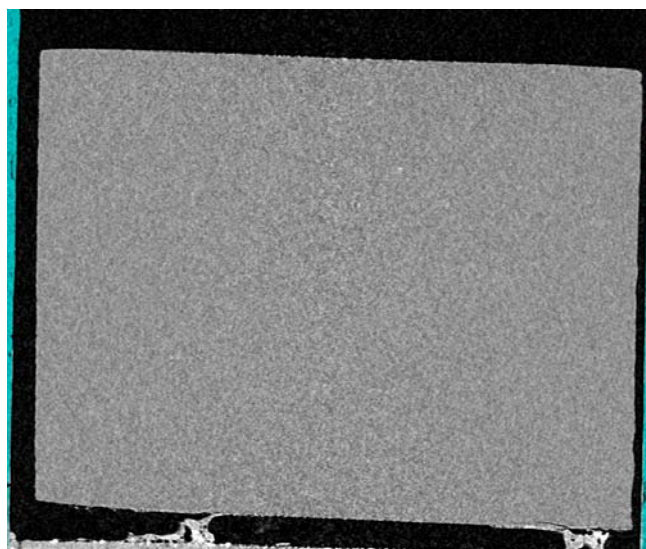
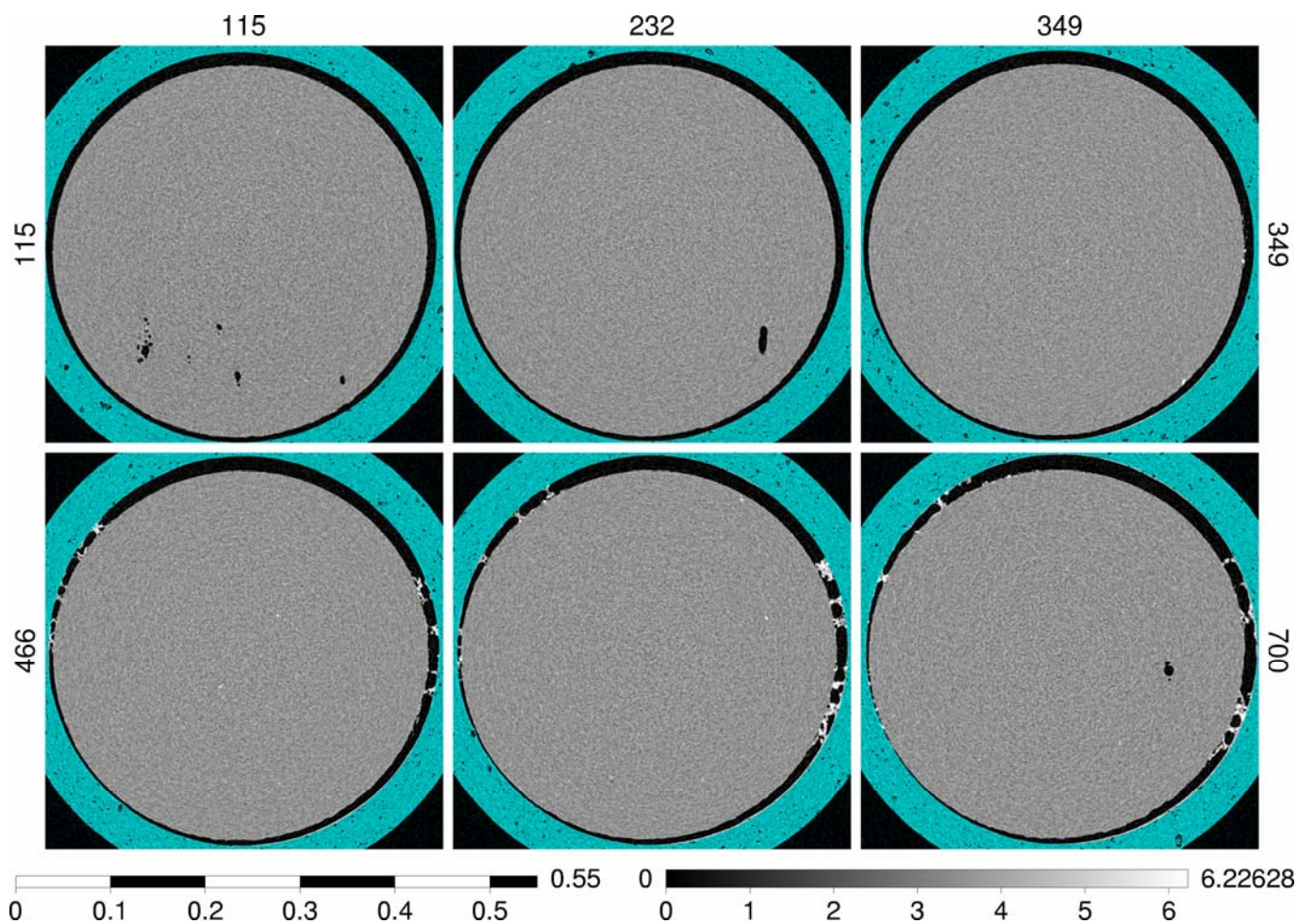
PV=150: CT value = 3.66252 1/cm
(theoretical LAC of quartz)

Ternary images:

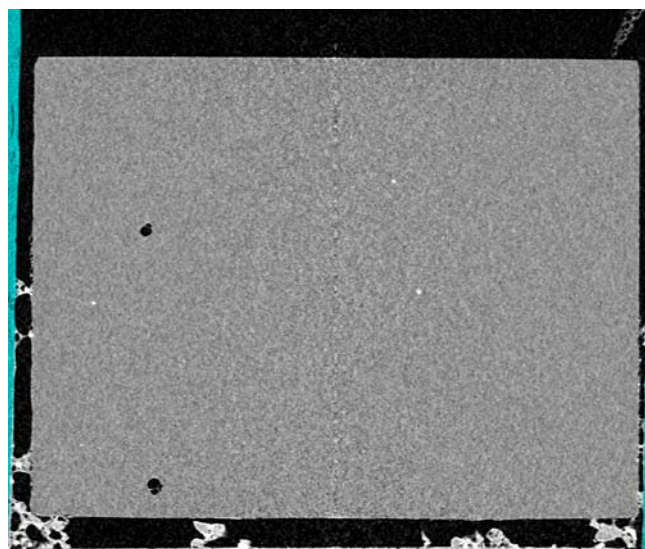
Threshold for obsidian: PV=73

Threshold for obsidian: PV=165

A-1-1 Run-03-2 850°C/10min
(051120c): browse image



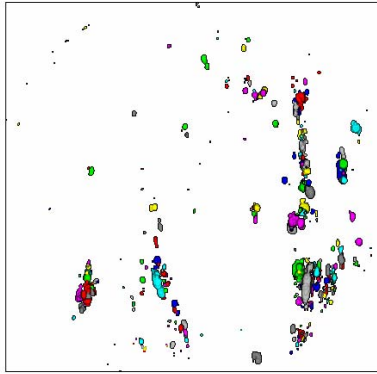
X-slice



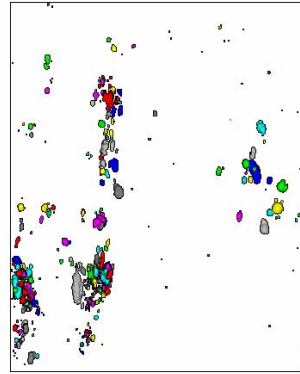
Y-slice

A-1-1 Run-03-2 850°C/10min (051120c): voids

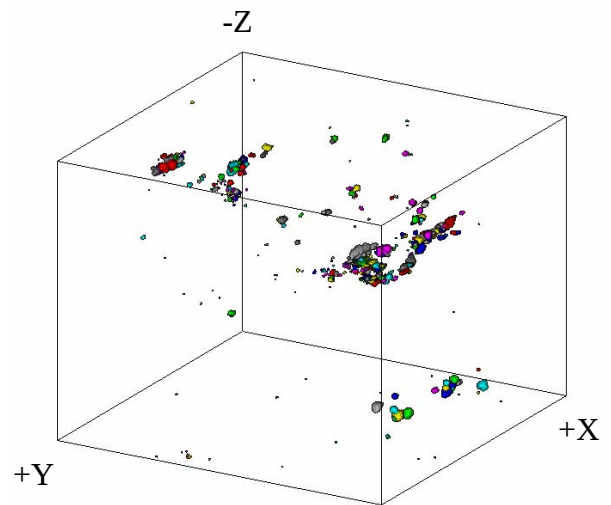
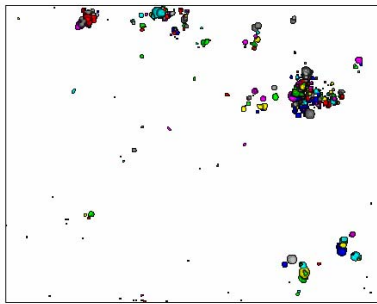
-Z image



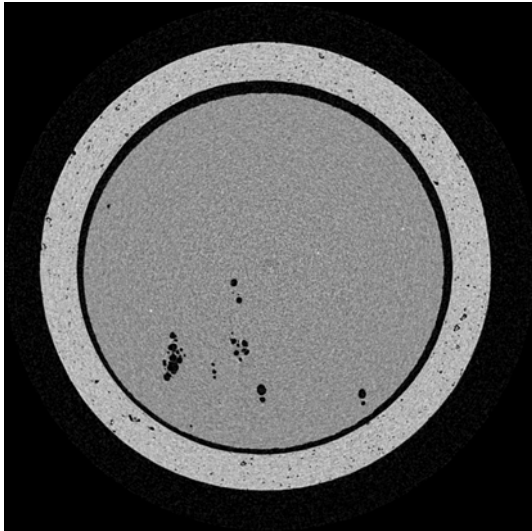
+X image



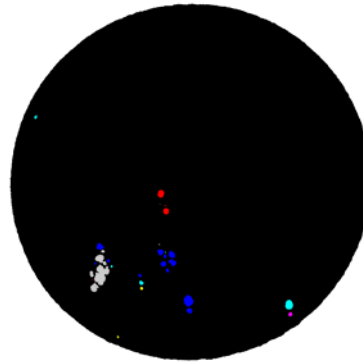
+Y image



051120d



byte/110.tif (width: 5.833 mm)



MHL_cm_gif/110.gif (width: 5.833 mm)

Imaging No.: 051120d

Sample: A-1-1 Run-03-3 850°C/15 min

Beamline: BL20B2

X-ray photon energy: 25 keV

Exposure time for each projection: 0.8 sec.

No. of pixels for each projection image: 1344 × 816 pels

No. of projection images for dark current : 2 (1 each before and after sample imaging)

No. of projection images for incident beam current (I_0): 151 (+1; for determining the rotation axis)

No. of projection images for transmitted beam current (I): 750 (+1; ditto)

Imaging sequence: One I_0 imaging after every 5 I imaging

Pixel size of projection images: 4.34 micron

Voxel size of reconstructed CT images: 4.34 micron

No. of voxels: 1344 × 1344 × 816

Location of sample rotation axis: $z \times 0.000180 + 673.440330 \pm 0.100979$ (z=0~815)

Byte images:

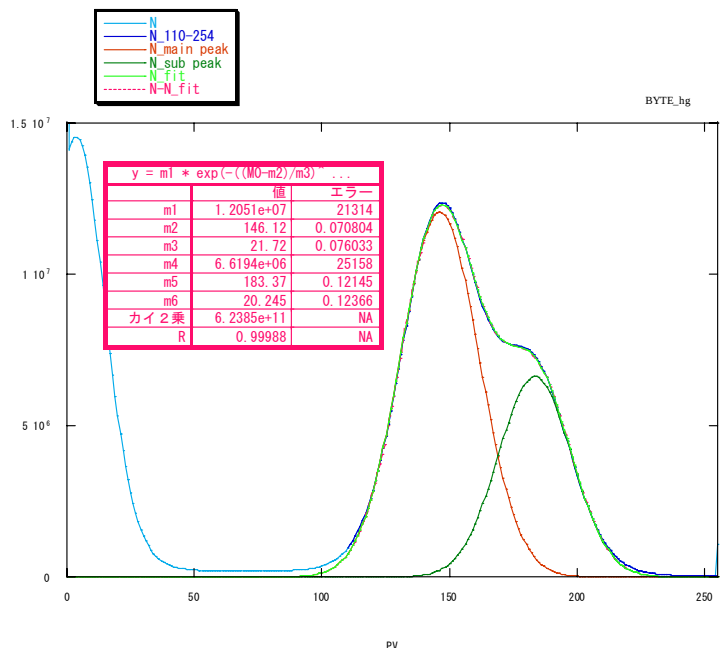
PV=0: CT value = 0 1/cm

PV=150: CT value = 3.66252 1/cm
(theoretical LAC of quartz)

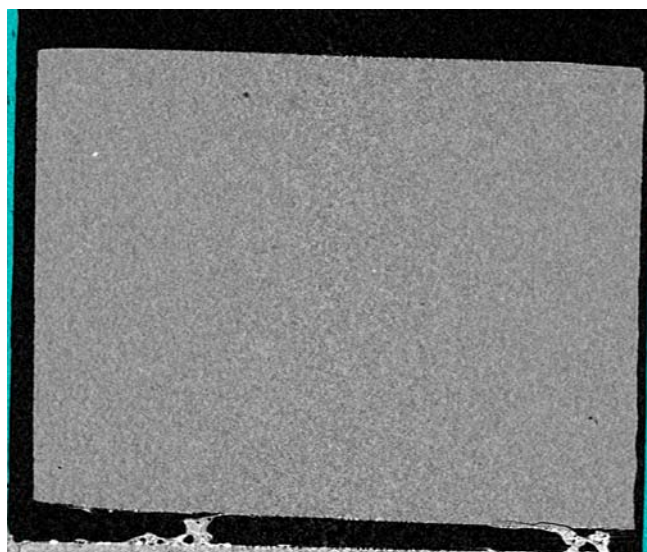
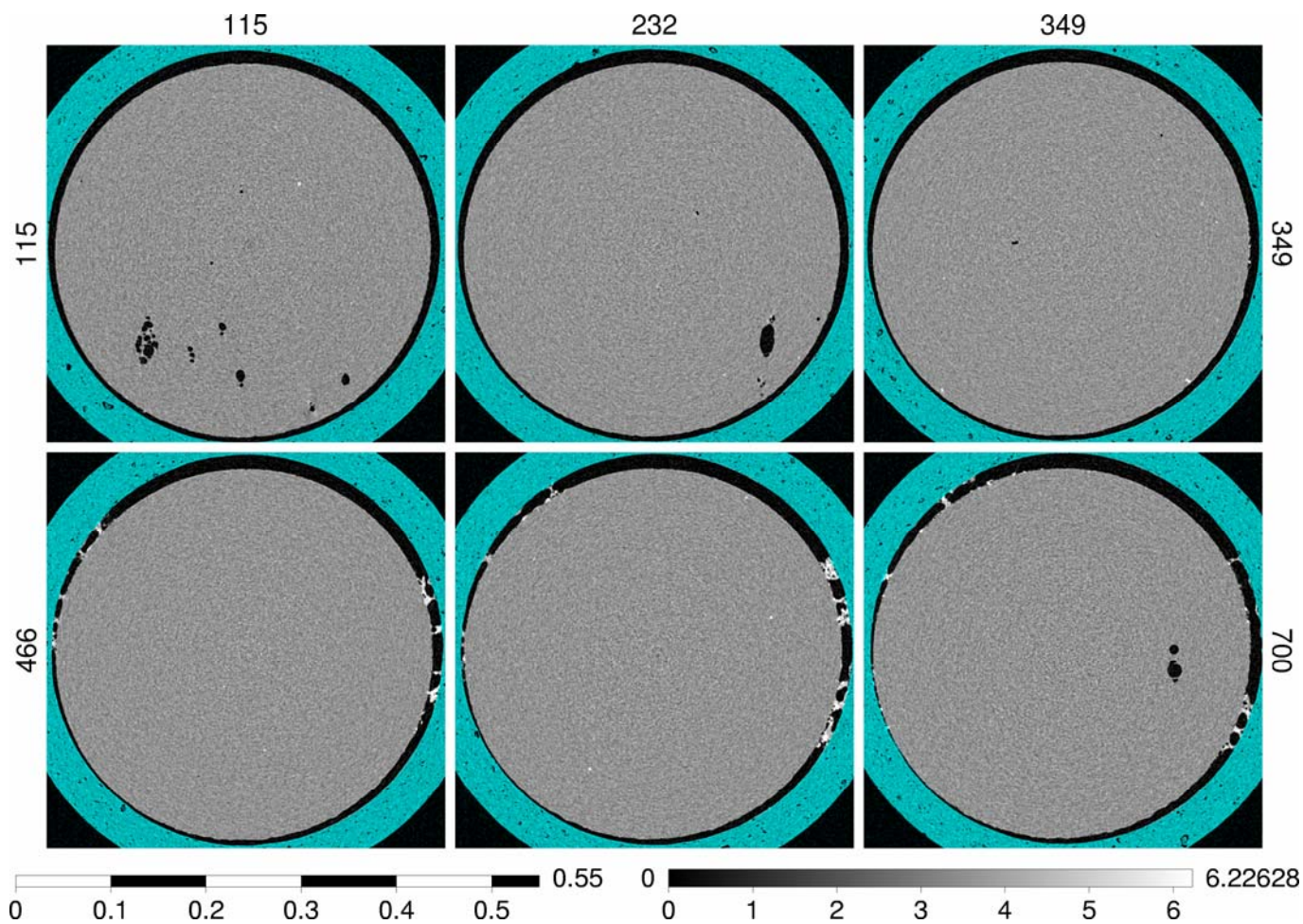
Ternary images:

Threshold for obsidian: PV=73

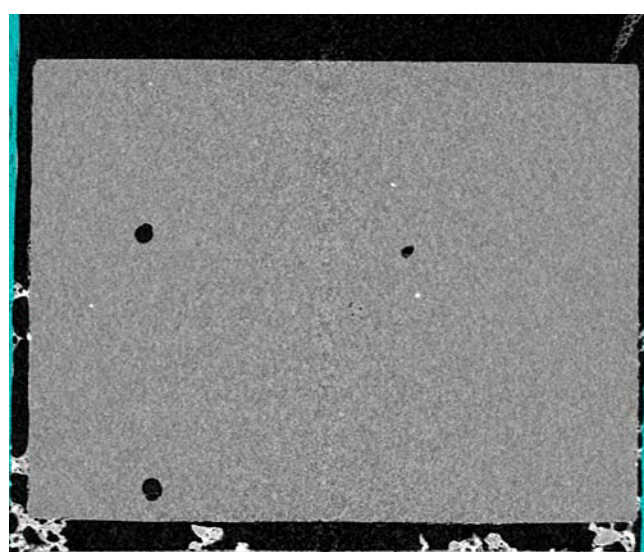
Threshold for obsidian: PV=165



A-1-1 Run-03-3 850°C/15min
(051120d): browse image



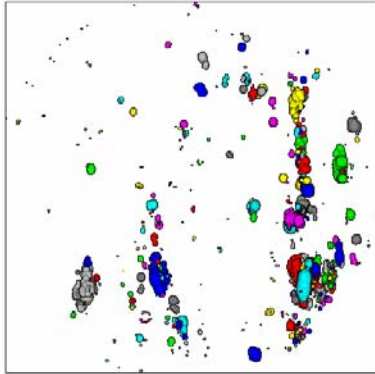
X-slice



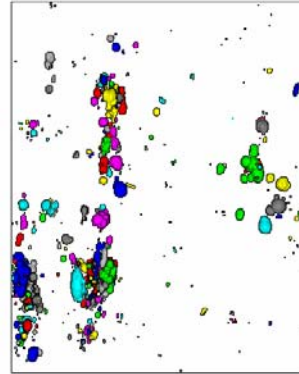
Y-slice

A-1-1 Run-03-3 850°C/15min (051120d): voids

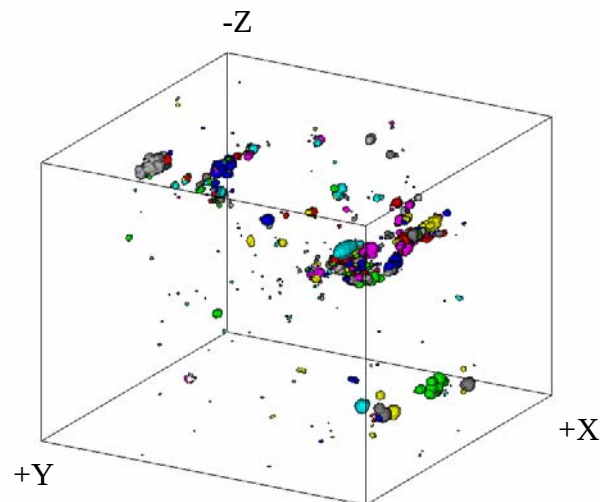
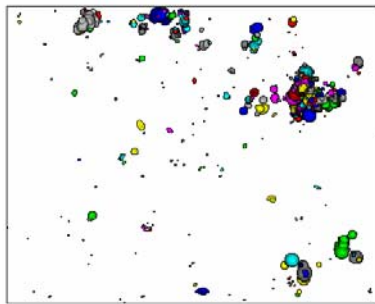
-Z image



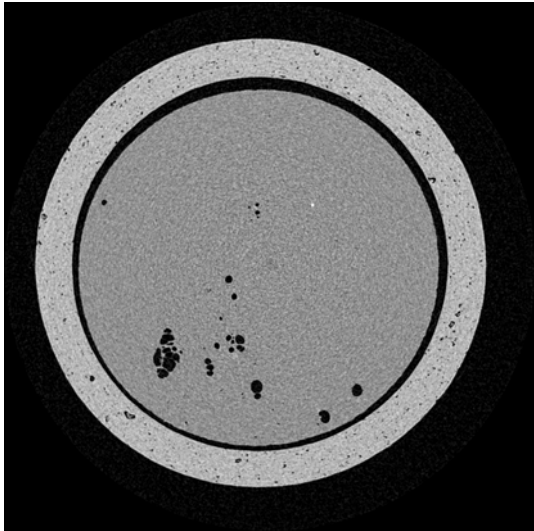
+X image



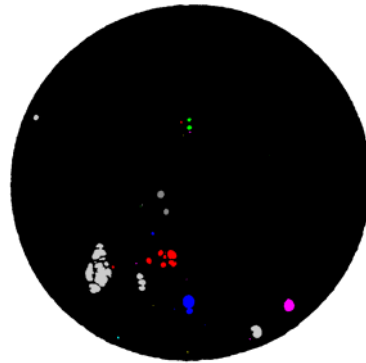
+Y image



051120e



byte/112.tif (width: 5.833 mm)



MHL_cm_gif/112.gif (width: 5.833 mm)

Imaging No.: 051120e

Sample: A-1-1 Run-03-4 850°C/20 min

Beamline: BL20B2

X-ray photon energy: 25 keV

Exposure time for each projection: 0.8 sec.

No. of pixels for each projection image: 1344×816 pels

No. of projection images for dark current : 2 (1 each before and after sample imaging)

No. of projection images for incident beam current (I_0): 151 (+1; for determining the rotation axis)

No. of projection images for transmitted beam current (I): 750 (+1; ditto)

Imaging sequence: One I_0 imaging after every 5 I imaging

Pixel size of projection images: 4.34 micron

Voxel size of reconstructed CT images: 4.34 micron

No. of voxels: $1344 \times 1344 \times 816$

Location of sample rotation axis: $z \times 0.000876 + 672.927097 \pm 0.159610$ ($z=0 \sim 815$)

Byte images:

PV=0: CT value = 0 1/cm

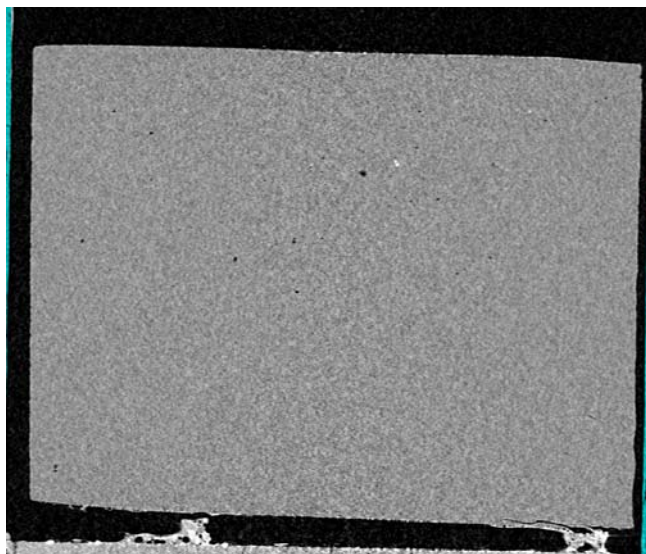
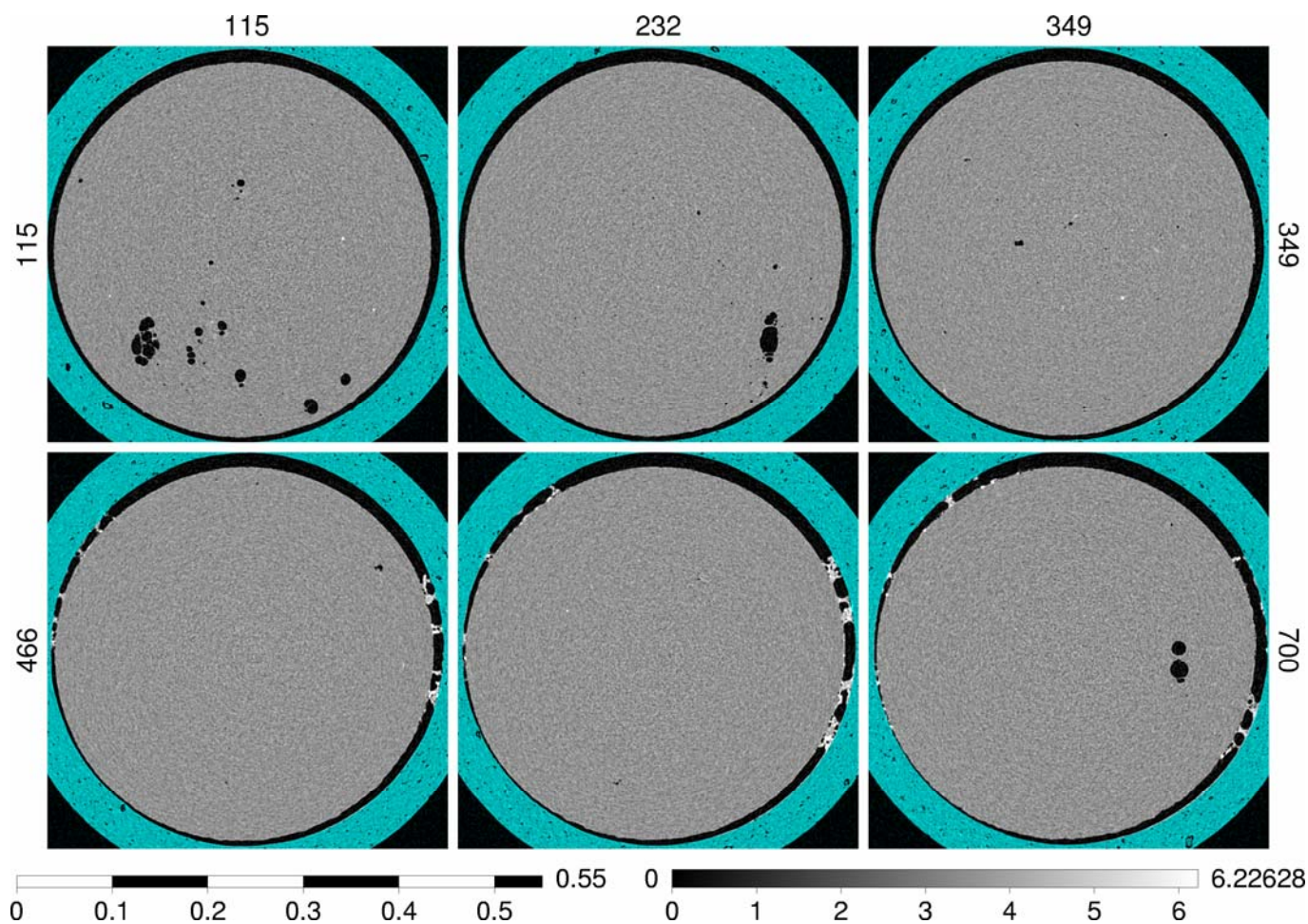
PV=150: CT value = 3.66252 1/cm
(theoretical LAC of quartz)

Ternary images:

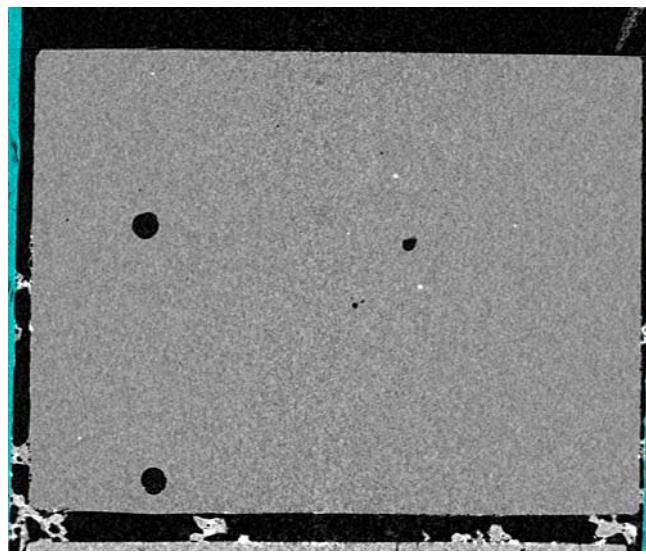
Threshold for obsidian: PV=73

Threshold for obsidian: PV=165

A-1-1 Run-03-4 850°C/20min
(051120e): browse image



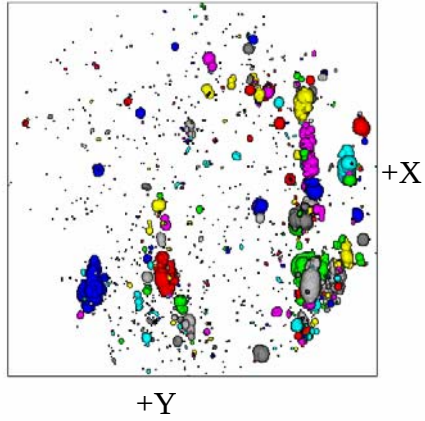
X-slice



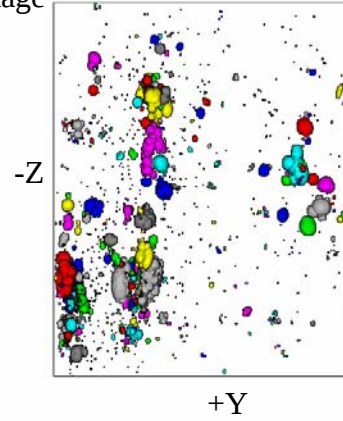
Y-slice

A-1-1 Run-03-4 850°C/20min (051120e): voids

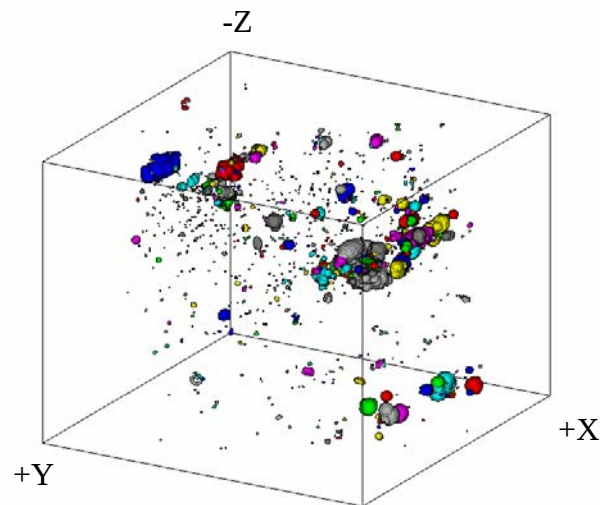
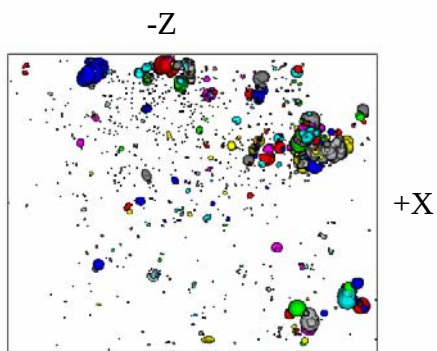
-Z image



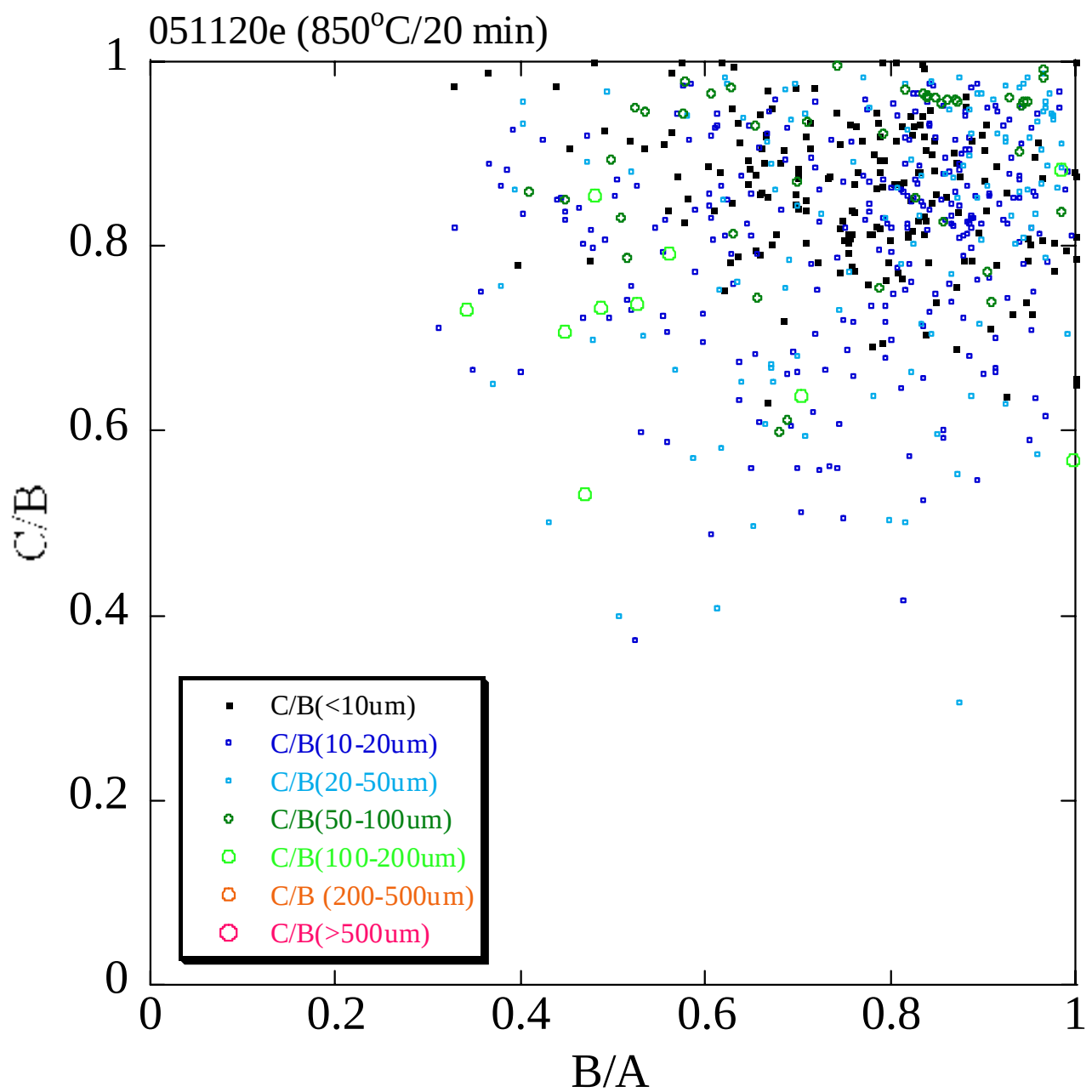
+X image



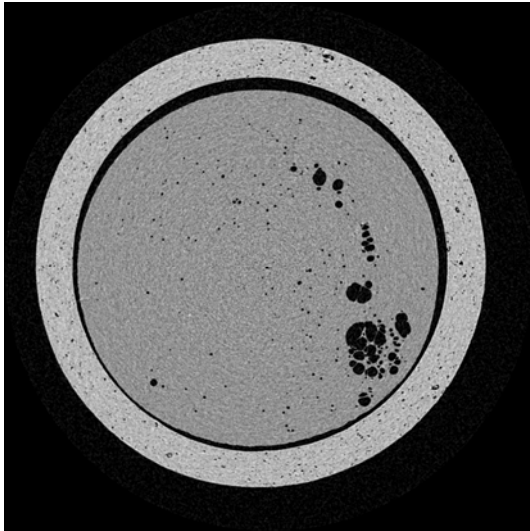
+Y image



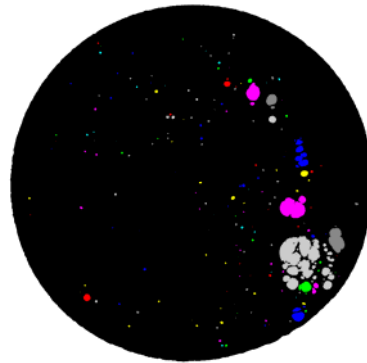
A-1-1 Run-03-4 850°C/20min (051120e):
void shape



051120f



byte/265.tif (width: 5.833 mm)



MHL_cm_gif/265.gif (width: 5.833 mm)

Imaging No.: 051120f

Sample: A-1-1 Run-03-5 850°C/25 min

Beamline: BL20B2

X-ray photon energy: 25 keV

Exposure time for each projection: 0.8 sec.

No. of pixels for each projection image: 1344 × 816 pels

No. of projection images for dark current : 2 (1 each before and after sample imaging)

No. of projection images for incident beam current (I_0): 151 (+1; for determining the rotation axis)

No. of projection images for transmitted beam current (I): 750 (+1; ditto)

Imaging sequence: One I_0 imaging after every 5 I imaging

Pixel size of projection images: 4.34 micron

Voxel size of reconstructed CT images: 4.34 micron

No. of voxels: 1344 × 1344 × 816

Location of sample rotation axis: $z \times 0.000225 + 672.925226 \pm 0.113578$ ($z=0 \sim 815$)

Byte images:

PV=0: CT value = 0 1/cm

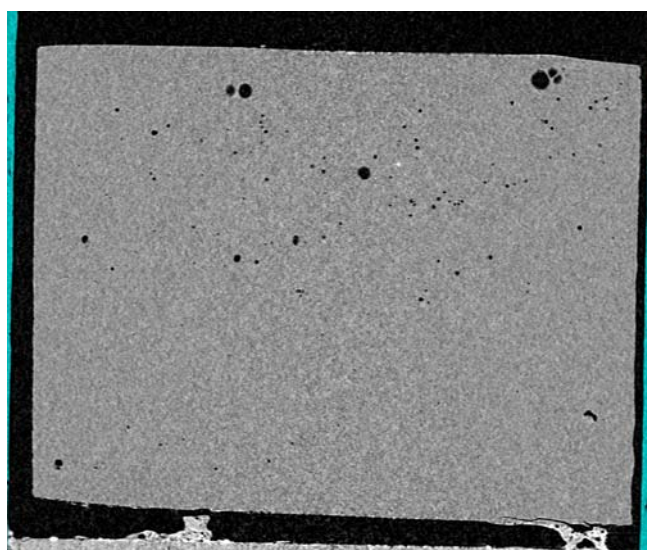
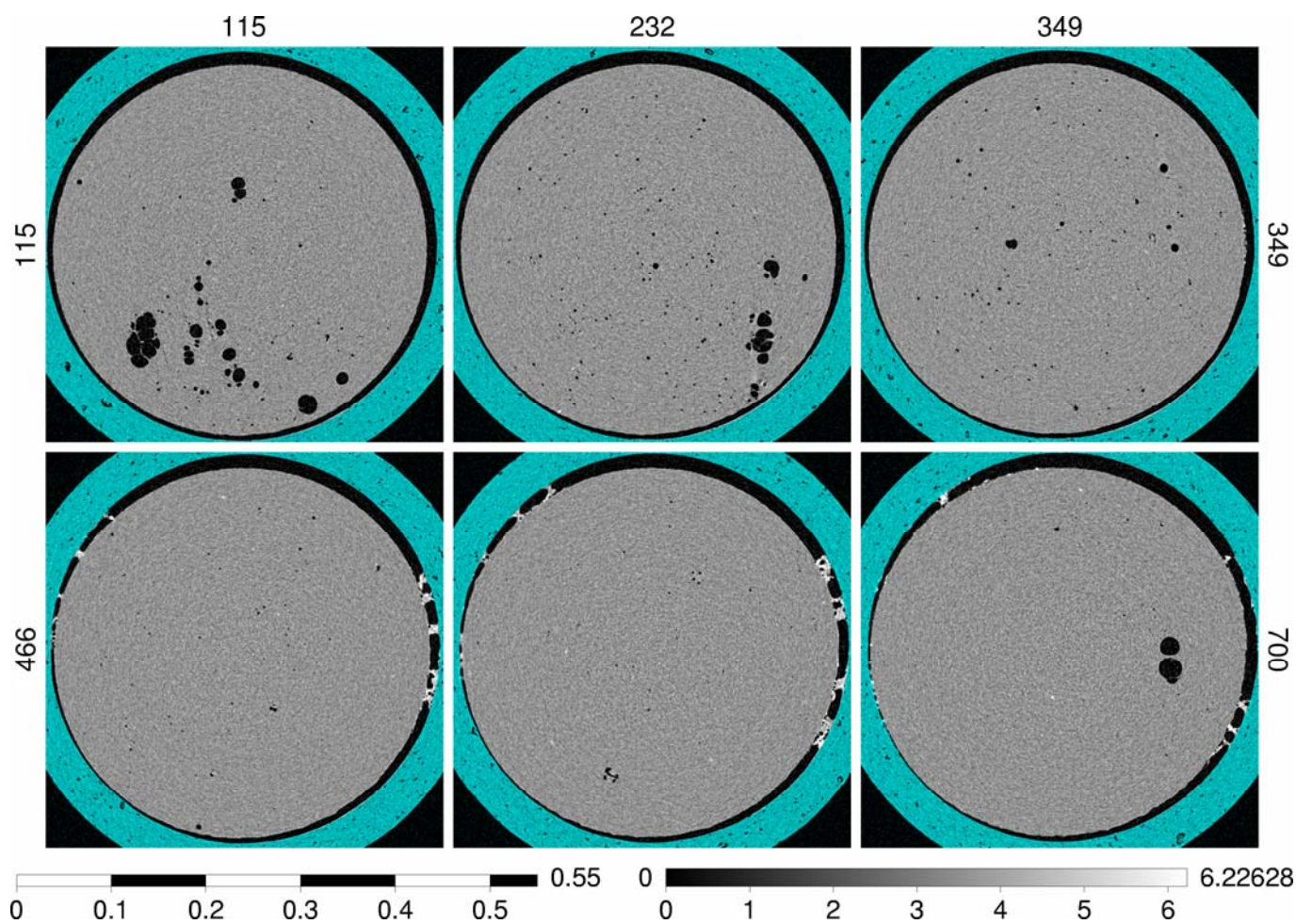
PV=150: CT value = 3.66252 1/cm
(theoretical LAC of quartz)

Ternary images:

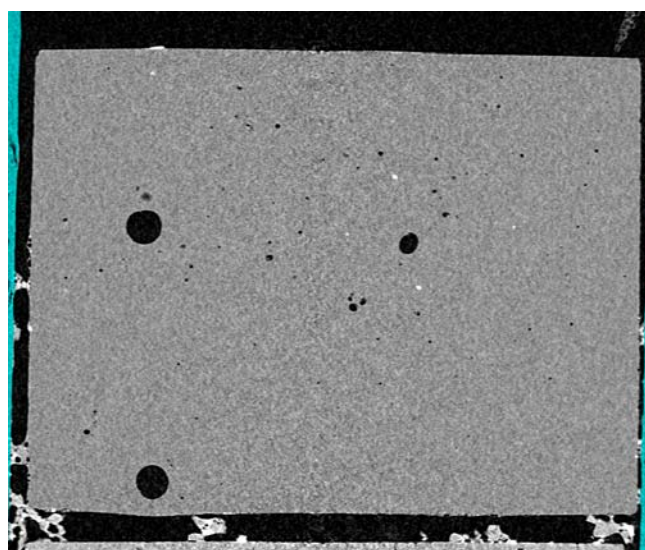
Threshold for obsidian: PV=73

Threshold for obsidian: PV=165

A-1-1 Run-03-5 850°C/25min
(051120f): browse image



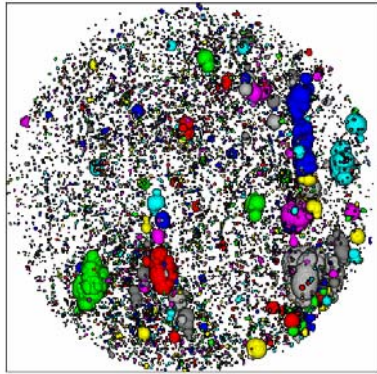
X-slice



Y-slice

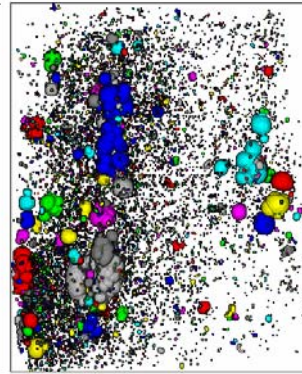
A-1-1 Run-03-5 850°C/25min (051120f): voids

-Z image



+Y

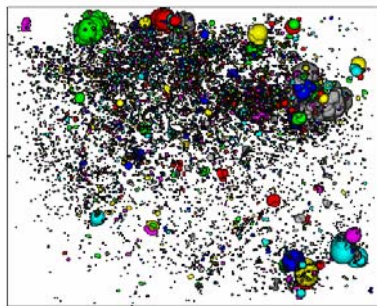
+X image



-Z

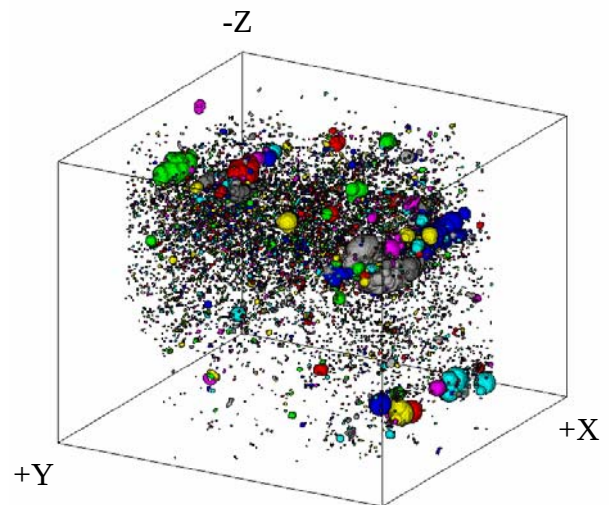
+Y

+Y image

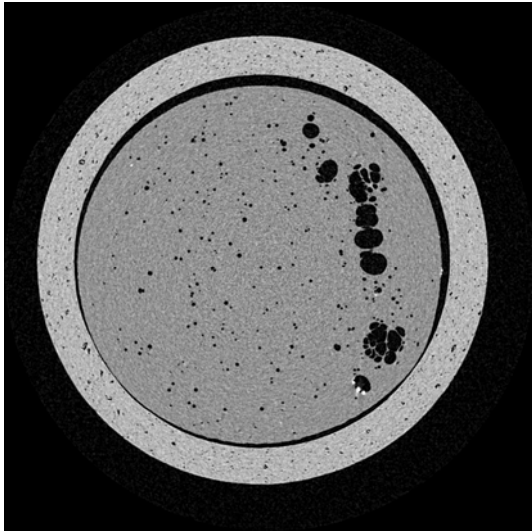


-Z

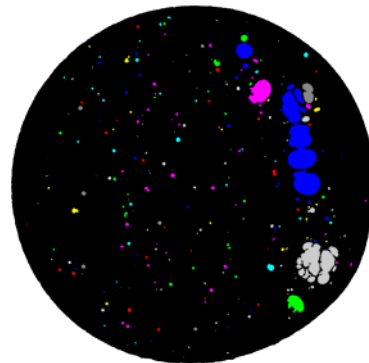
+X



051120g



byte/426.tif (width: 5.833 mm)



MHL_cm_gif/426.gif (width: 5.833 mm)

Imaging No.: 051120g

Sample: A-1-1 Run-03-6 850°C/30min

Beamline: BL20B2

X-ray photon energy: 25 keV

Exposure time for each projection: 0.8 sec.

No. of pixels for each projection image: 1344 × 816 pels

No. of projection images for dark current : 2 (1 each before and after sample imaging)

No. of projection images for incident beam current (I_0): 151 (+1; for determining the rotation axis)

No. of projection images for transmitted beam current (I): 750 (+1; ditto)

Imaging sequence: One I_0 imaging after every 5 I imaging

Pixel size of projection images: 4.34 micron

Voxel size of reconstructed CT images: 4.34 micron

No. of voxels: 1344 × 1344 × 816

Location of sample rotation axis: $z \times 0.000862 + 672.464492 \pm 0.148649$ (z=0~815)

Byte images:

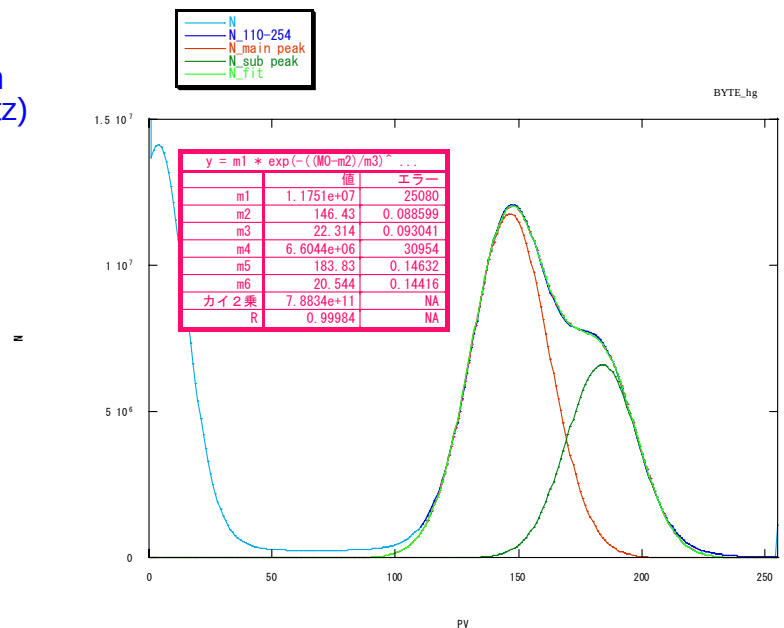
PV=0: CT value = 0 1/cm

PV=150: CT value = 3.66252 1/cm
(theoretical LAC of quartz)

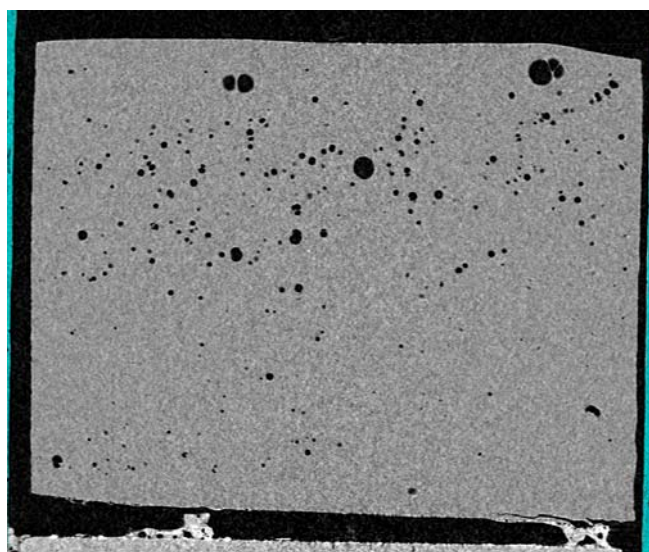
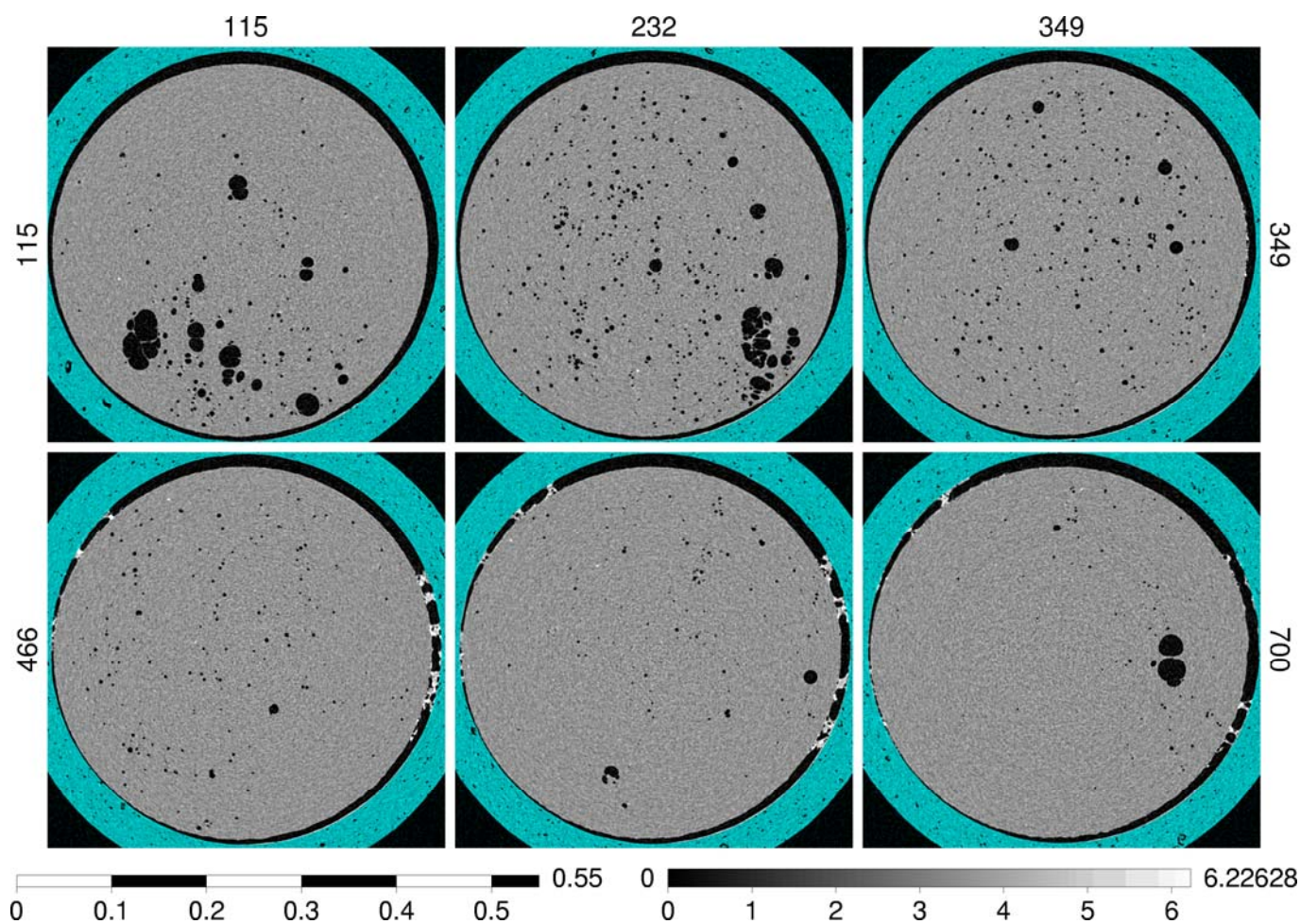
Ternary images:

Threshold for obsidian: PV=73

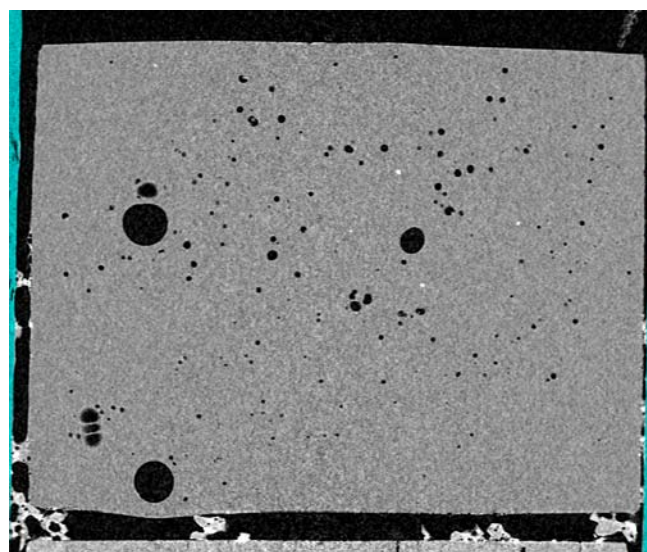
Threshold for obsidian: PV=165



A-1-1 Run-03-6 850°C/30min
(051120g): browse image



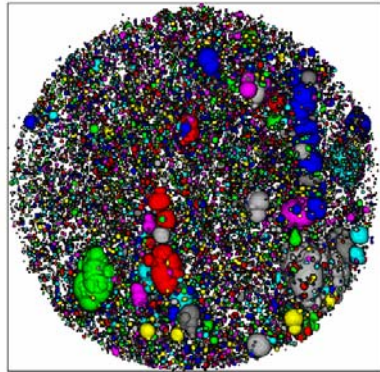
X-slice



Y-slice

A-1-1 Run-03-6 850°C/30min (051120g): voids

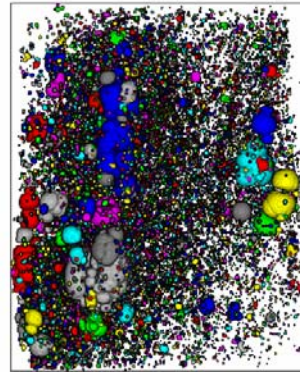
-Z image



+Y

+X

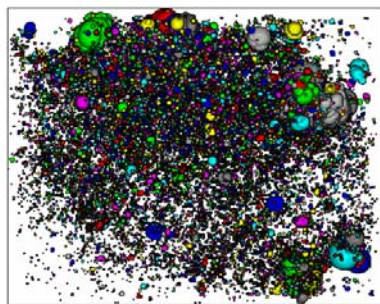
+X image



+Y

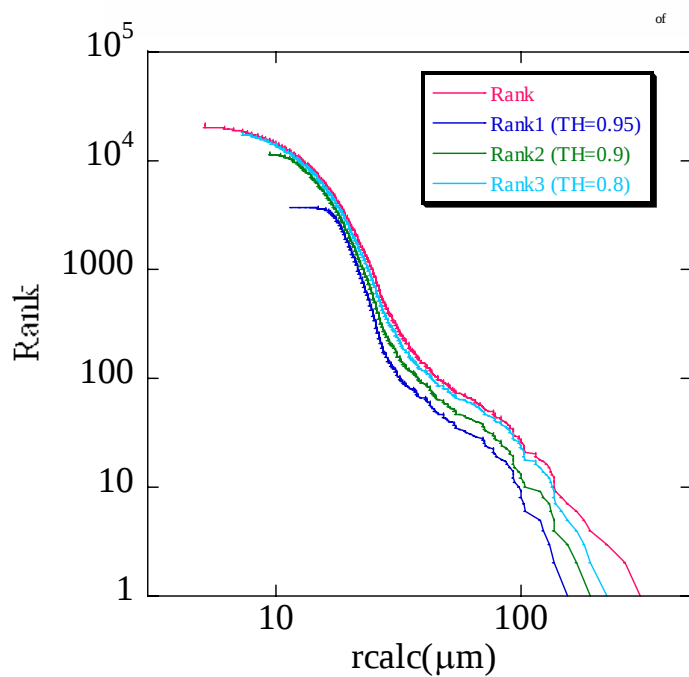
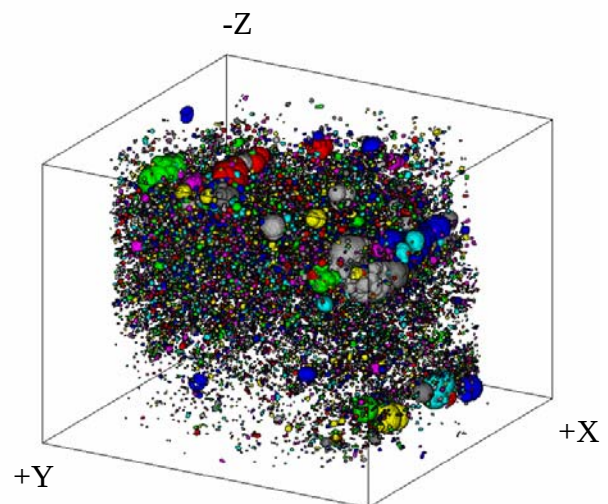
-Z

+Y image



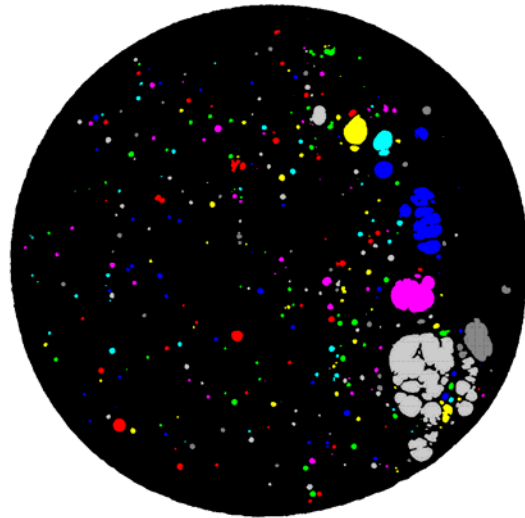
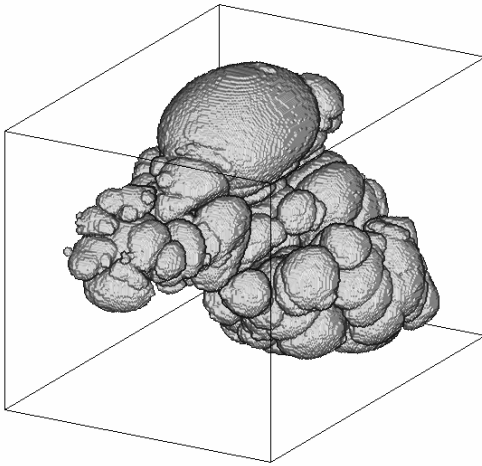
-Z

+X



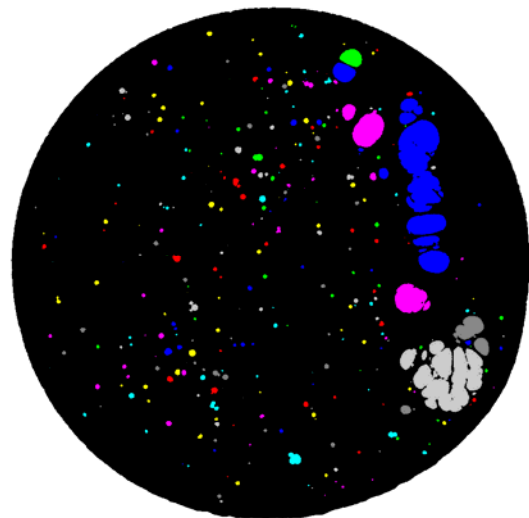
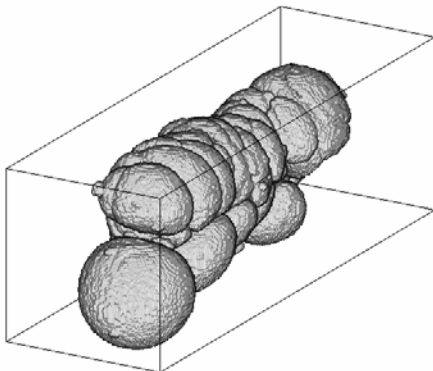
A-1-1 Run-03-6 850°C/30min (051120g): void grains: rank-1 and -2

Rank		V	g(x)	g(y)	g(z)	Vo/Vcalc
1	Gray	1506088	932	879	257	0.5810



MHL_cm_gif/257.gif (width: 5.833 mm)

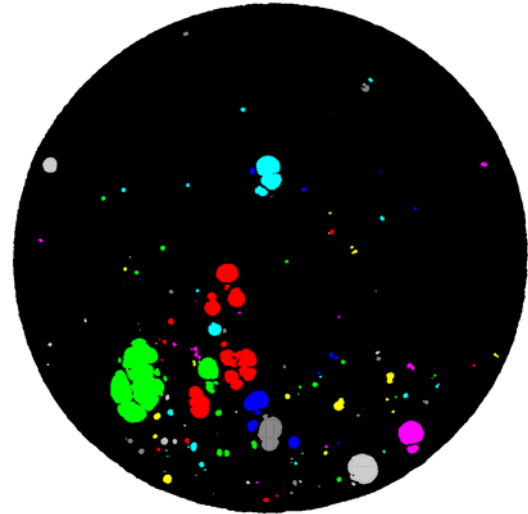
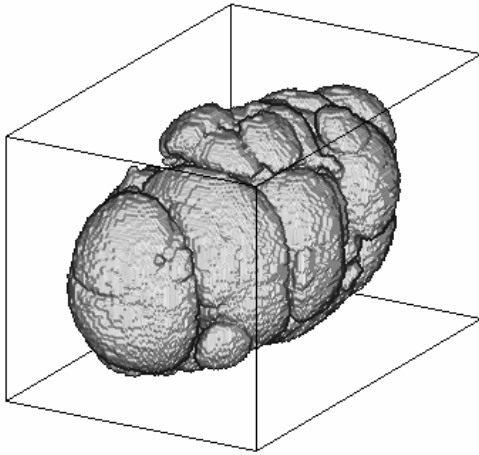
Rank		V	g(x)	g(y)	g(z)	Vo/Vcalc
2	Blue	1000474	916	545	299	0.7057



MHL_cm_gif/299.gif (width: 5.833 mm)

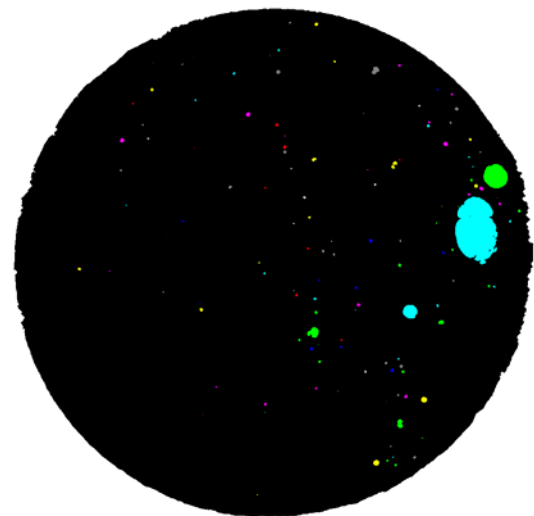
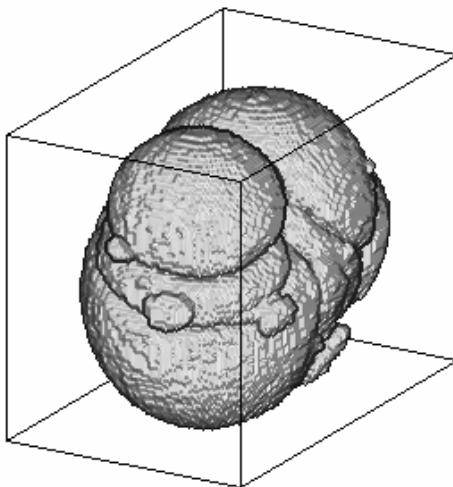
A-1-1 Run-03-6 850°C/30min (051120g): void grains: rank-3 and -4

Rank		V	g(x)	g(y)	g(z)	Vo/Vcalc
3	Green	579353	405	887	102	0.8821



MHL_cm_gif/102.gif (width: 5.833 mm)

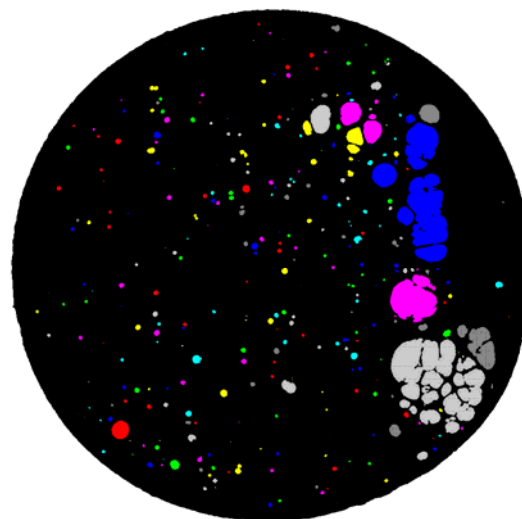
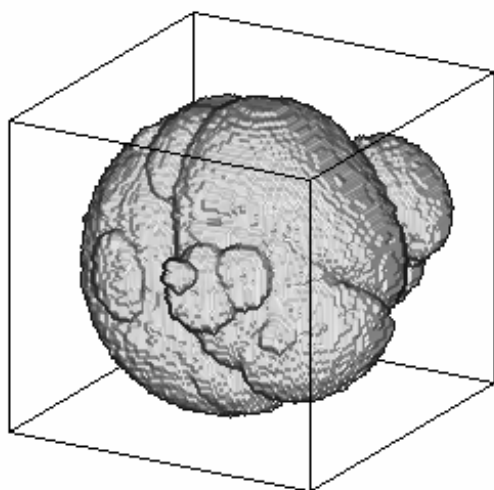
Rank		V	g(x)	g(y)	g(z)	Vo/Vcalc
4	Cyan	376075	1010	607	631	0.9295



MHL_cm_gif/631.gif (width: 5.833 mm)

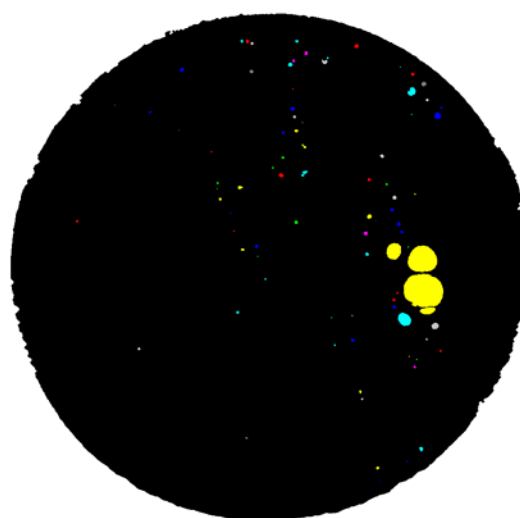
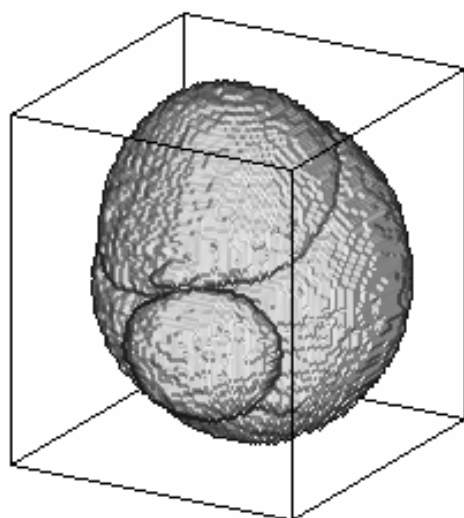
A-1-1 Run-03-6 850°C/30min (051120g): void grains: rank-6 and -7

Rank		V	g(x)	g(y)	g(z)	Vo/Vcalc
6	Magenta	248782	897	727	272	0.9332



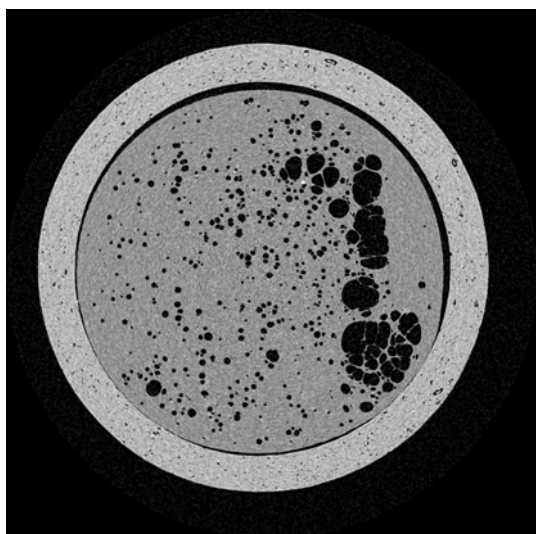
MHL_cm_gif/272.gif (width: 5.833 mm)

Rank		V	g(x)	g(y)	g(z)	Vo/Vcalc
7	Yellow	192023	923	706	690	0.9725

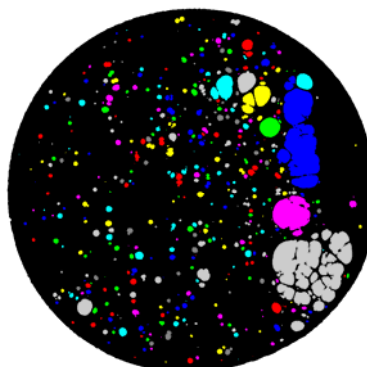


MHL_cm_gif/690.gif (width: 5.833 mm)

051120h



byte/265.tif (width: 5.833 mm)



MHL_cm_gif/265.gif (width: 5.833 mm)

Imaging No.: 051120h

Sample: A-1-1 Run-03-7 850°C/35 min

Beamline: BL20B2

X-ray photon energy: 25 keV

Exposure time for each projection: 0.8 sec.

No. of pixels for each projection image: 1344 × 816 pels

No. of projection images for dark current : 2 (1 each before and after sample imaging)

No. of projection images for incident beam current (I_0): 151 (+1; for determining the rotation axis)

No. of projection images for transmitted beam current (I): 750 (+1; ditto)

Imaging sequence: One I_0 imaging after every 5 I imaging

Pixel size of projection images: 4.34 micron

Voxel size of reconstructed CT images: 4.34 micron

No. of voxels: 1344 × 1344 × 816

Location of sample rotation axis: $z \times 0.000366 + 672.910393 \pm 0.148861$ ($z=0 \sim 815$)

Byte images:

PV=0: CT value = 0 1/cm

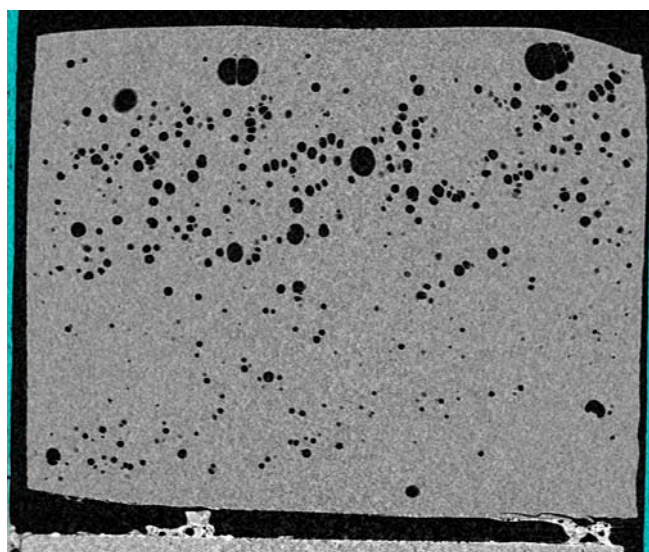
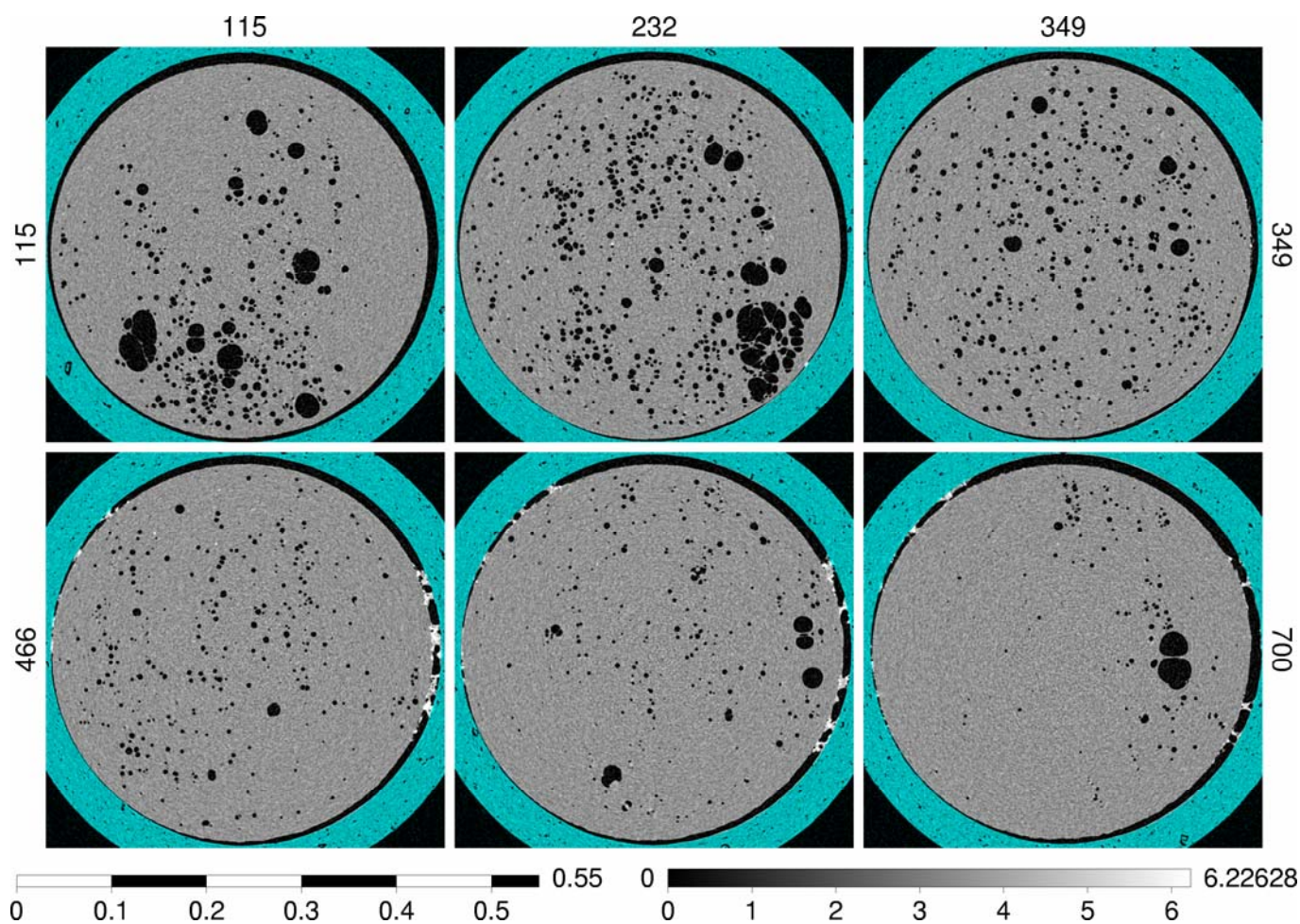
PV=150: CT value = 3.66252 1/cm
(theoretical LAC of quartz)

Ternary images:

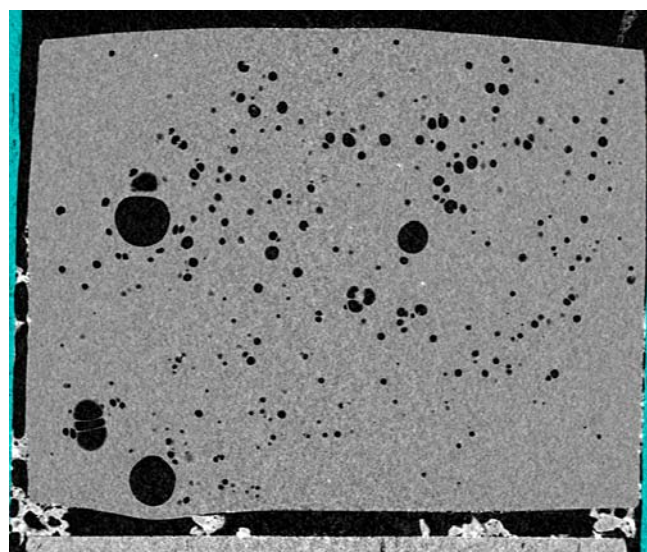
Threshold for obsidian: PV=73

Threshold for obsidian: PV=165

A-1-1 Run-03-7 850°C/35min
(051120h): browse image



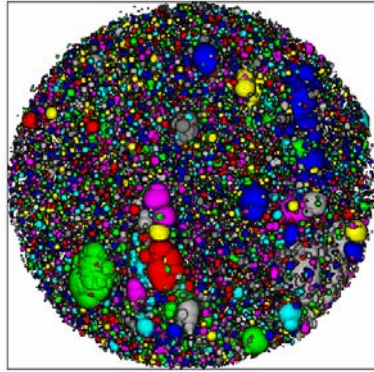
X-slice



Y-slice

A-1-1 Run-03-7 850°C/35min (051120h): voids

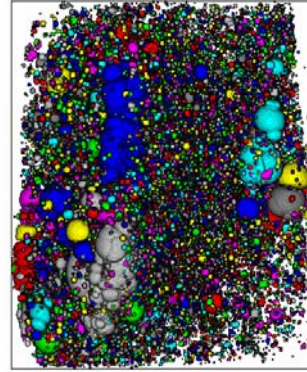
-Z image



+Y

+X

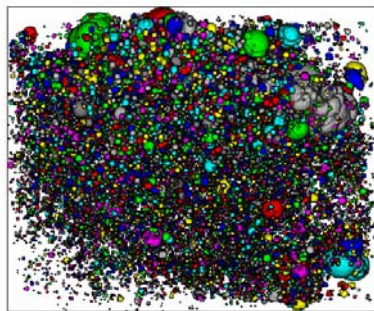
+X image



+Y

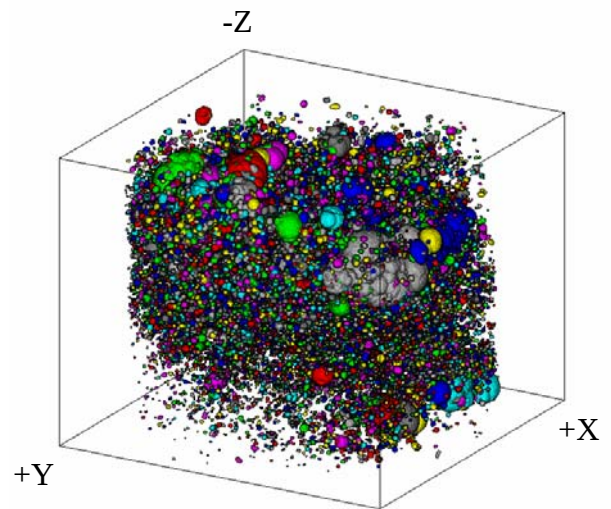
-Z

+Y image

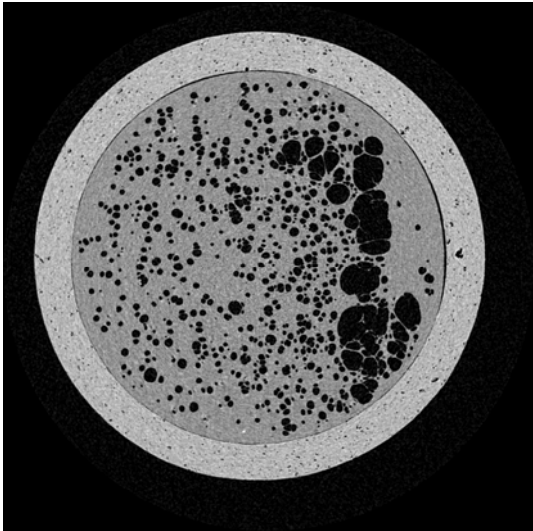


-Z

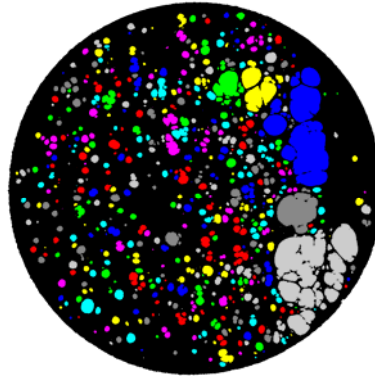
+X



051120i



byte/285.tif (width: 5.833 mm)



MHL_cm_gif/285.gif (width: 5.833 mm)

Imaging No.: 051120i

Sample: A-1-1 Run-03-8 850°C/40 min

Beamline: BL20B2

X-ray photon energy: 25 keV

Exposure time for each projection: 0.8 sec.

No. of pixels for each projection image: 1344×832 pels

No. of projection images for dark current : 2 (1 each before and after sample imaging)

No. of projection images for incident beam current (I_0): 151 (+1; for determining the rotation axis)

No. of projection images for transmitted beam current (I): 750 (+1; ditto)

Imaging sequence: One I_0 imaging after every 5 I imaging

Pixel size of projection images: 4.34 micron

Voxel size of reconstructed CT images: 4.34 micron

No. of voxels: $1344 \times 1344 \times 832$

Location of sample rotation axis: $z \times 0.000093 + 672.991198 \pm 0.217899$ (z=0~831)

Byte images:

PV=0: CT value = 0 1/cm

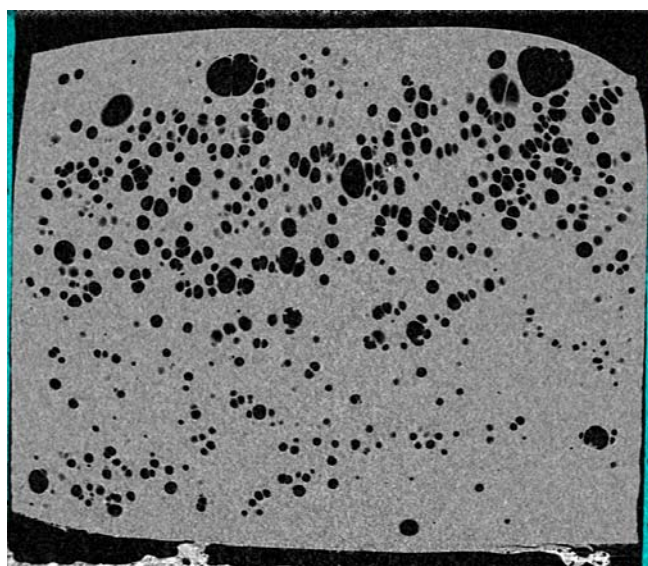
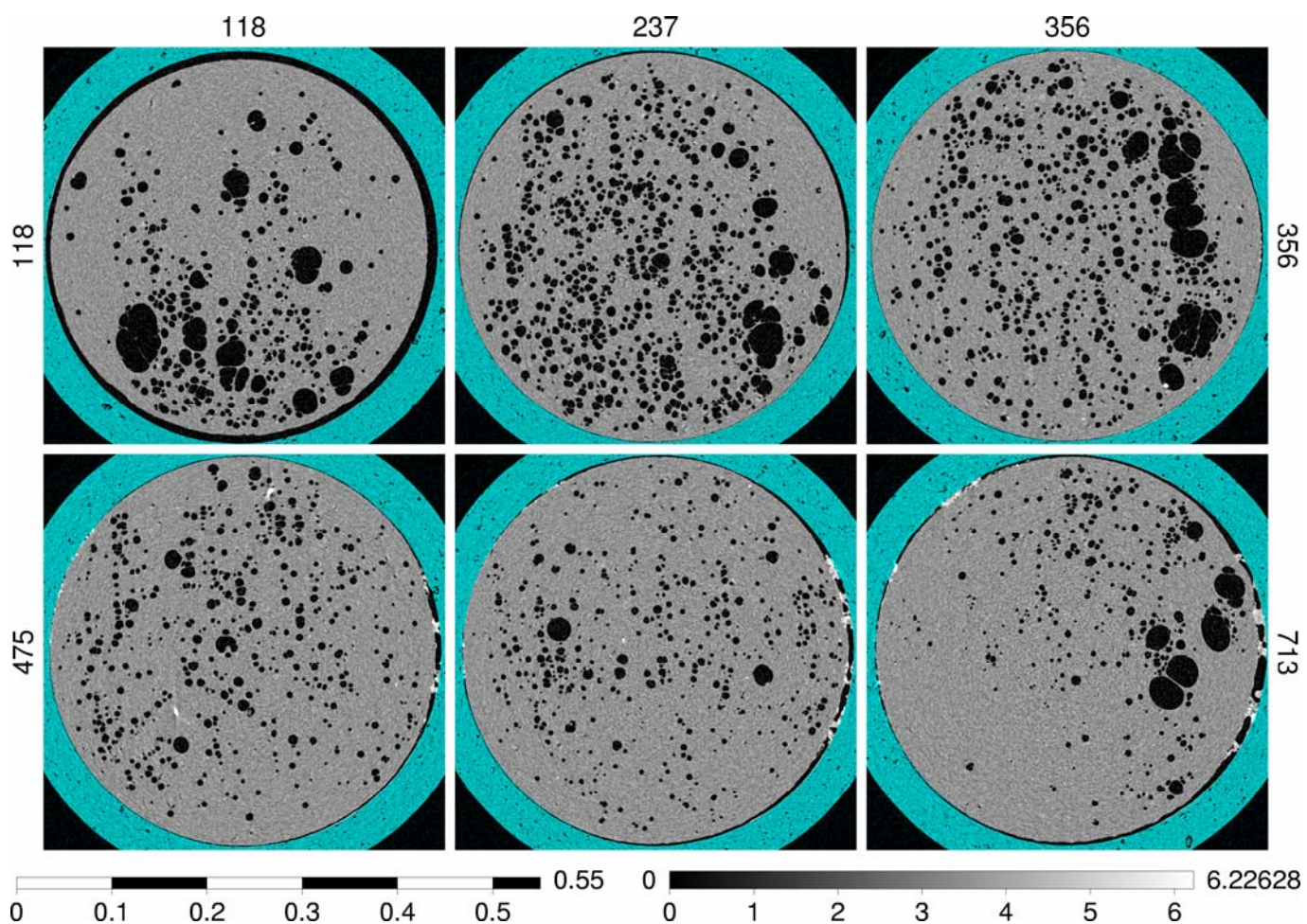
PV=150: CT value = 3.66252 1/cm
(theoretical LAC of quartz)

Ternary images:

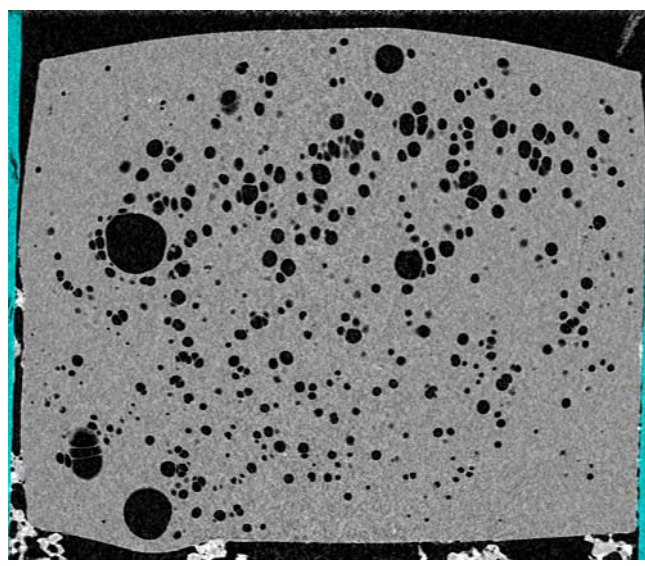
Threshold for obsidian: PV=73

Threshold for obsidian: PV=165

A-1-1 Run-03-8 850°C/40min
(051120i): browse image



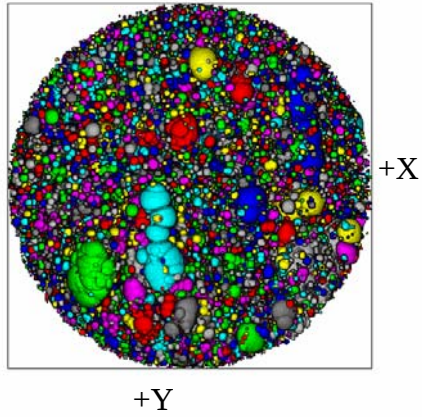
X-slice



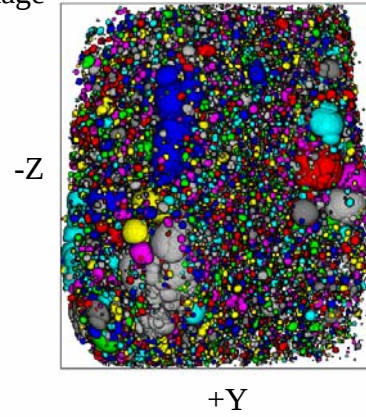
Y-slice

A-1-1 Run-03-8 850°C/40min (051120i): voids

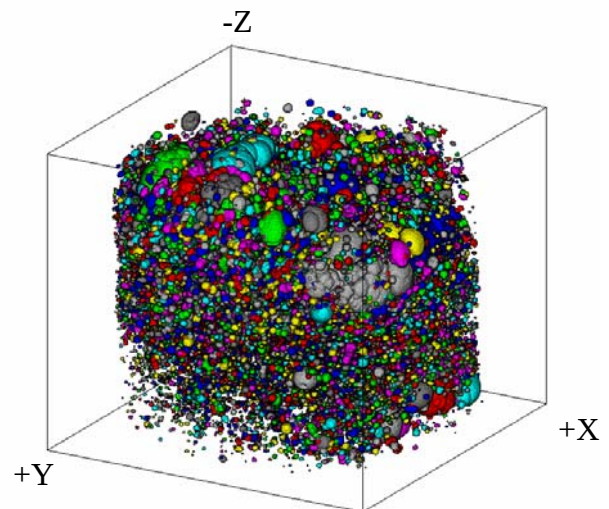
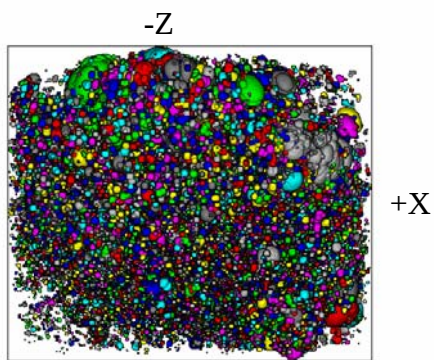
-Z image



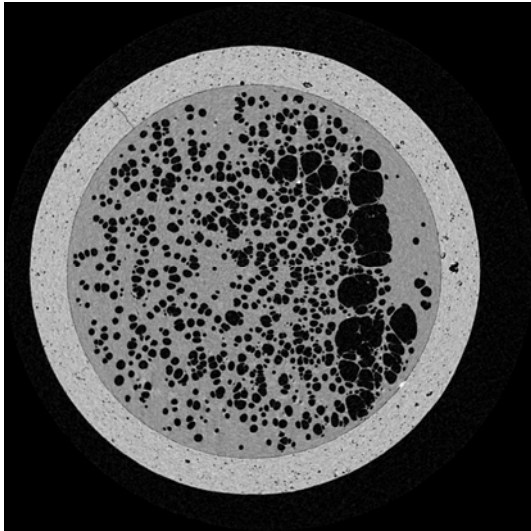
+X image



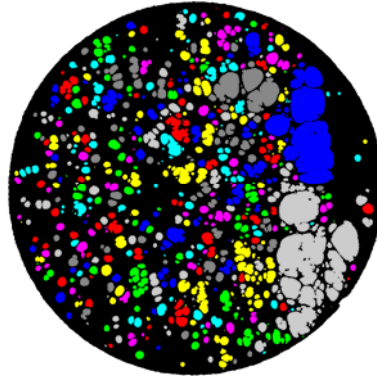
+Y image



051120jk



byte/265.tif (width: 5.833 mm)



MHL_cm_gif/356.gif (width: 5.833 mm)

Imaging No.: 051120jk

Sample: A-1-1 Run-03-9 850°C/45 min

Beamline: BL20B2

X-ray photon energy: 25 keV

Exposure time for each projection: 0.8 sec.

No. of pixels for each projection image: 1344 × 816 pels

No. of projection images for dark current : 2 (1 each before and after sample imaging)

No. of projection images for incident beam current (I_0): 151 (+1; for determining the rotation axis)

No. of projection images for transmitted beam current (I): 750 (+1; ditto)

Imaging sequence: One I_0 imaging after every 5 I imaging

Pixel size of projection images: 4.34 micron

Voxel size of reconstructed CT images: 4.34 micron

No. of voxels: 1344 × 1344 × 816

Location of sample rotation axis: $z \times 0.000204 + 673.382326 \pm 0.110531$ (z=0~815) j

Location of sample rotation axis: $z \times 0.000636 + 672.834980 \pm 0.170821$ (z=0~815) k

Byte images:

PV=0: CT value = 0 1/cm

PV=150: CT value = 3.66252 1/cm
(theoretical LAC of quartz)

Mosaic: origin coordinate

051120j: (0,0,0)

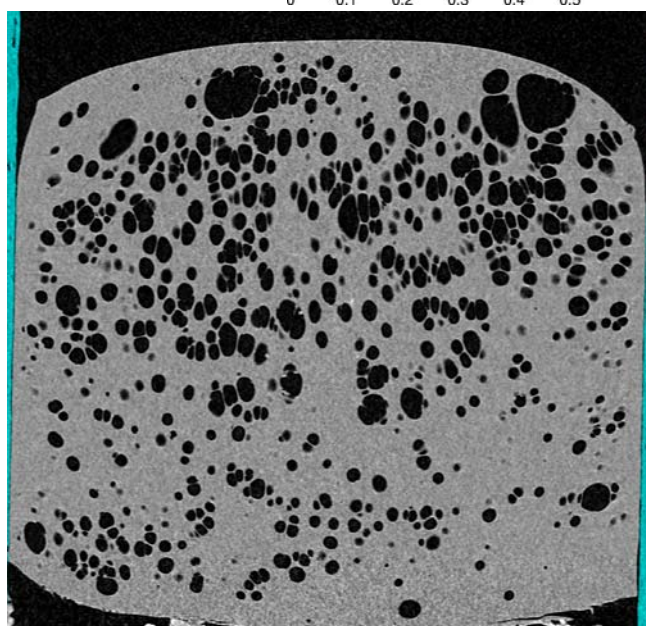
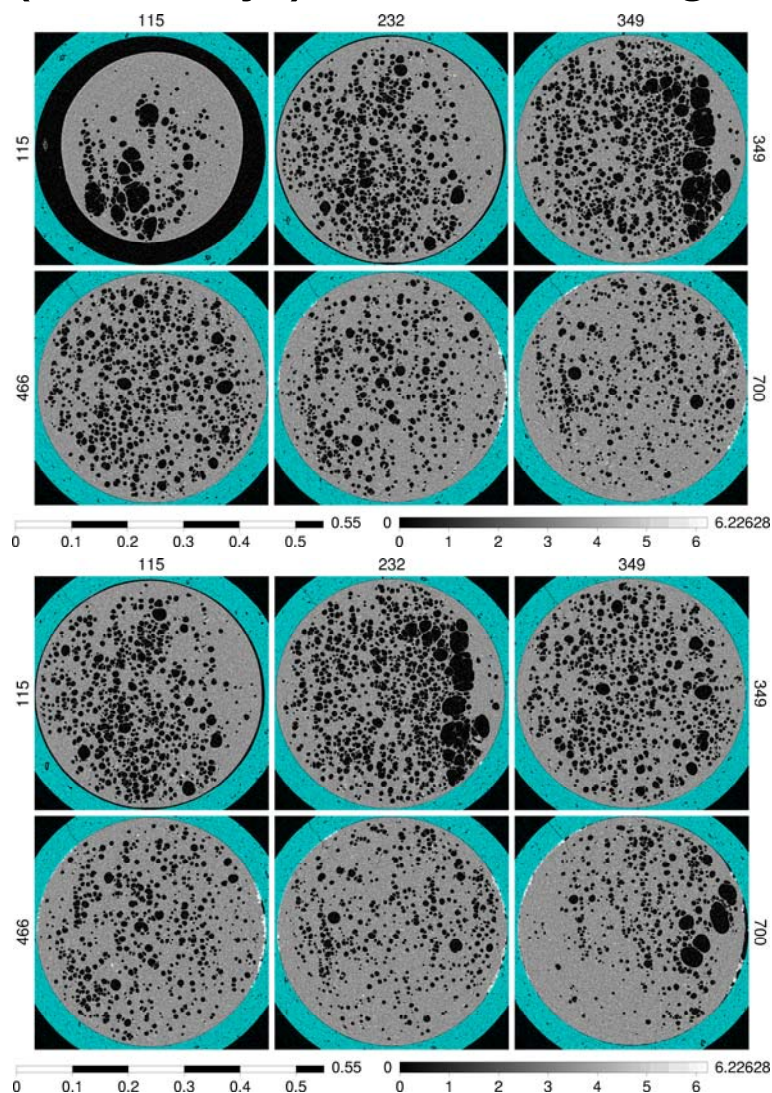
051120k: (0,0,-114)

Ternary images:

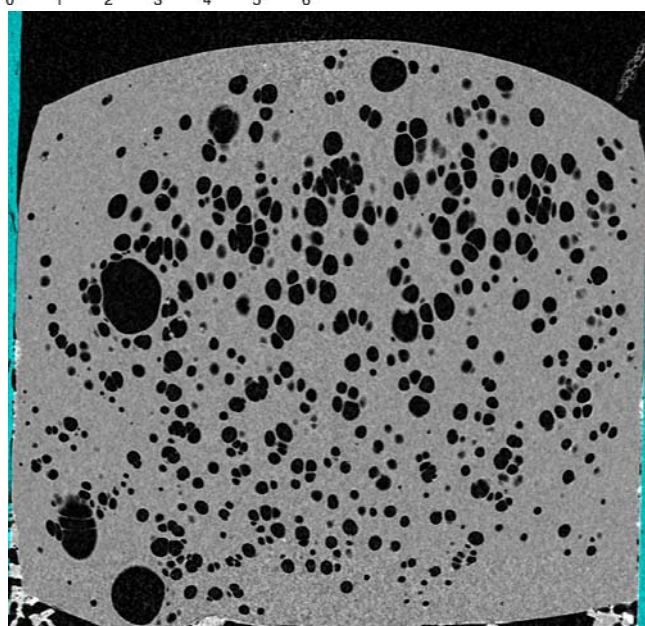
Threshold for obsidian: PV=73

Threshold for obsidian: PV=165

A-1-1 Run-03-9 850°C/45min (051120jk): browse image



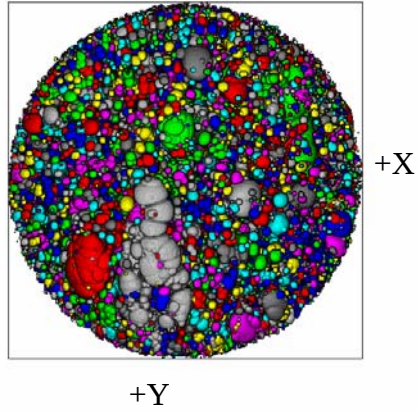
X-slice



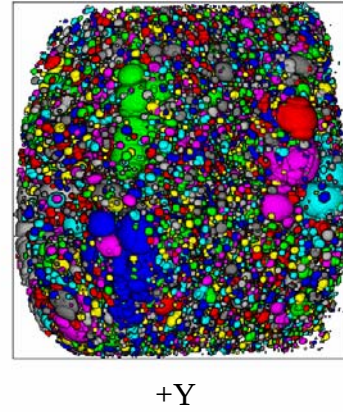
Y-slice

A-1-1 Run-03-9 850°C/45min (051120jk): voids

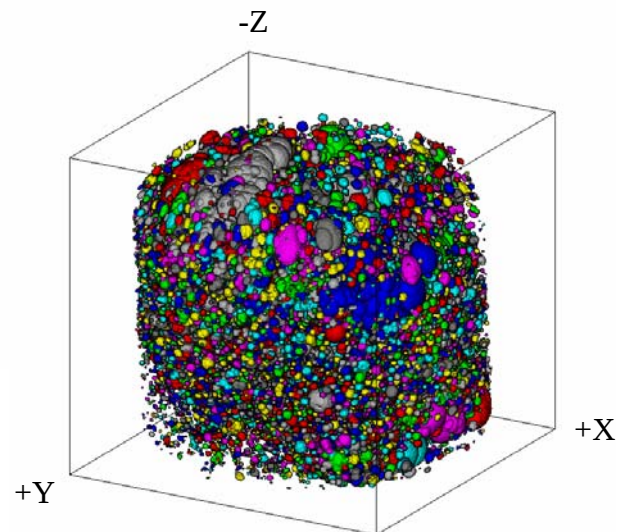
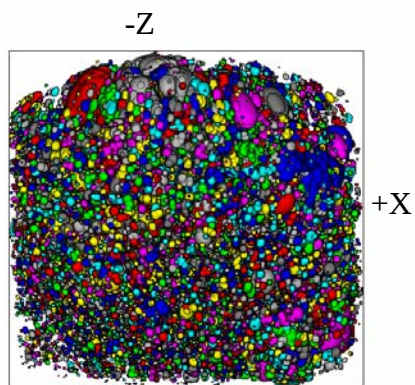
-Z image



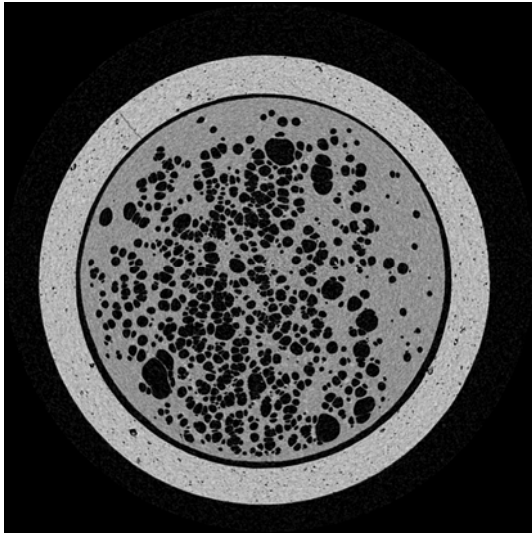
+X image



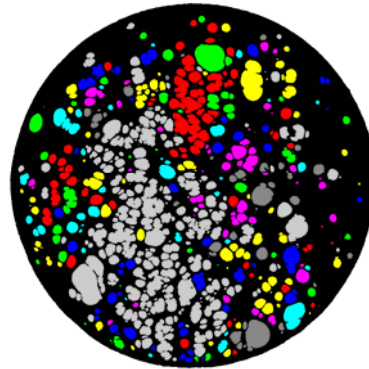
+Y image



051120Im



byte/245.tif (width: 5.833 mm)



MHL_cm_gif/245.gif (width: 5.833 mm)

Imaging No.: 051120Im

Sample: A-1-1 Run-03-10 850°C/50 min

Beamline: BL20B2

X-ray photon energy: 25 keV

Exposure time for each projection: 0.8 sec.

No. of pixels for each projection image: 1344 × 816 pels

No. of projection images for dark current : 2 (1 each before and after sample imaging)

No. of projection images for incident beam current (I_0): 151 (+1; for determining the rotation axis)

No. of projection images for transmitted beam current (I): 750 (+1; ditto)

Imaging sequence: One I_0 imaging after every 5 I imaging

Pixel size of projection images: 4.34 micron

Voxel size of reconstructed CT images: 4.34 micron

No. of voxels: 1344 × 1344 × 816

Location of sample rotation axis: $z \times 0.000630 + 672.870181 \pm 0.170747$ ($z=0 \sim 815$) I

Location of sample rotation axis: $z \times 0.000157 + 673.408256 \pm 0.091370$ ($z=0 \sim 815$) m

Byte images:

PV=0: CT value = 0 1/cm

PV=150: CT value = 3.66252 1/cm
(theoretical LAC of quartz)

Mosaic: origin coordinate

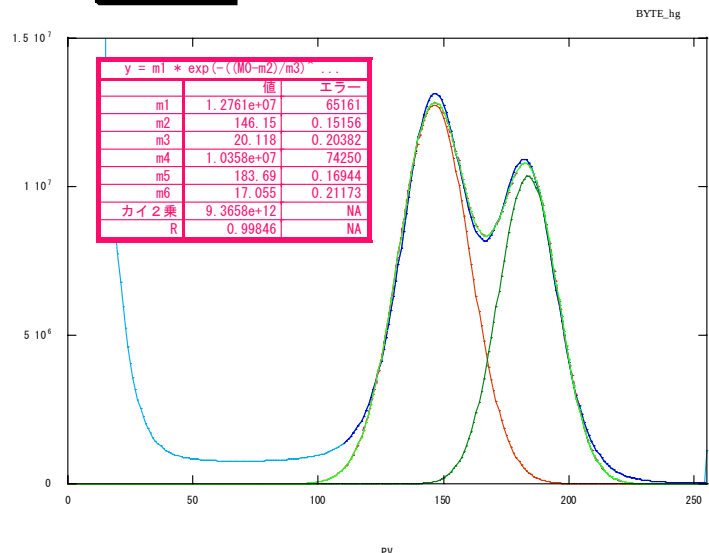
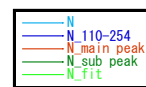
051120I: (0,0,0)

051120m: (0,1,-274)

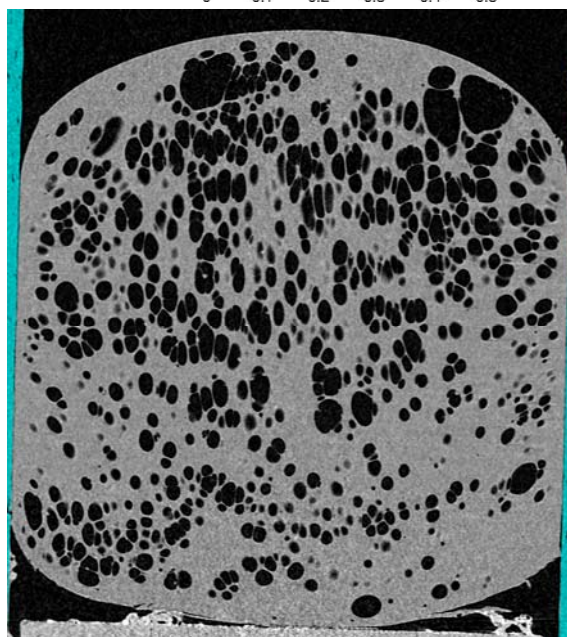
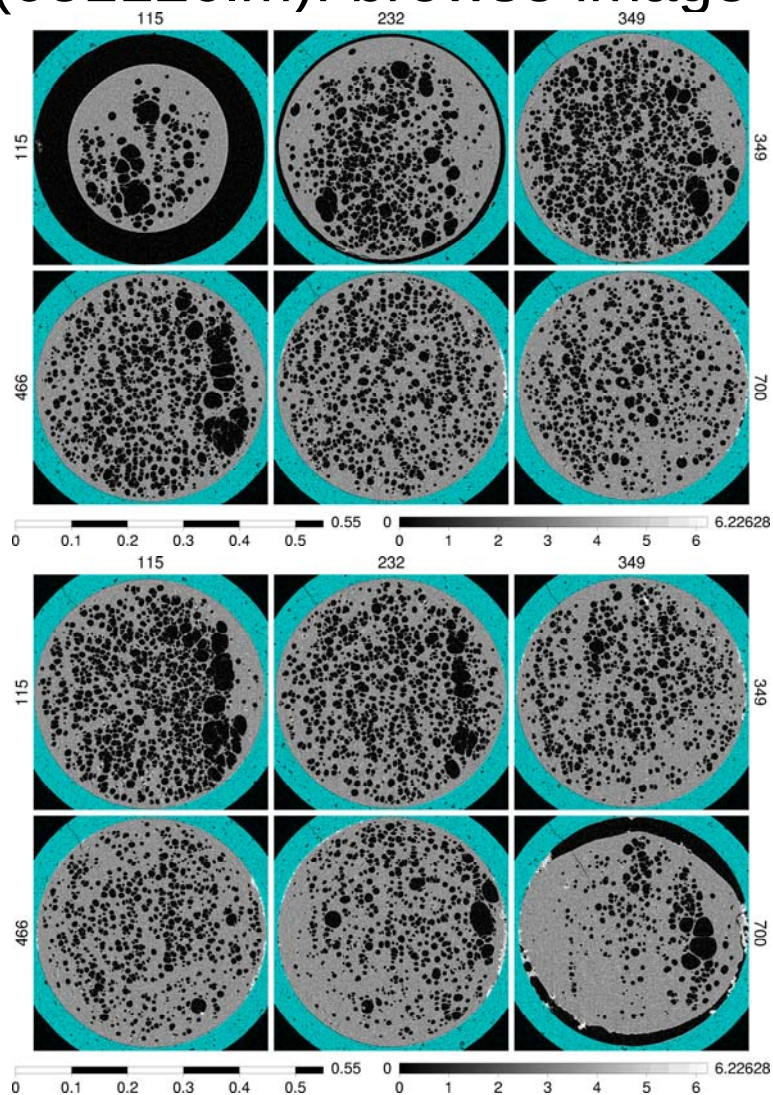
Ternary images:

Threshold for obsidian: PV=73

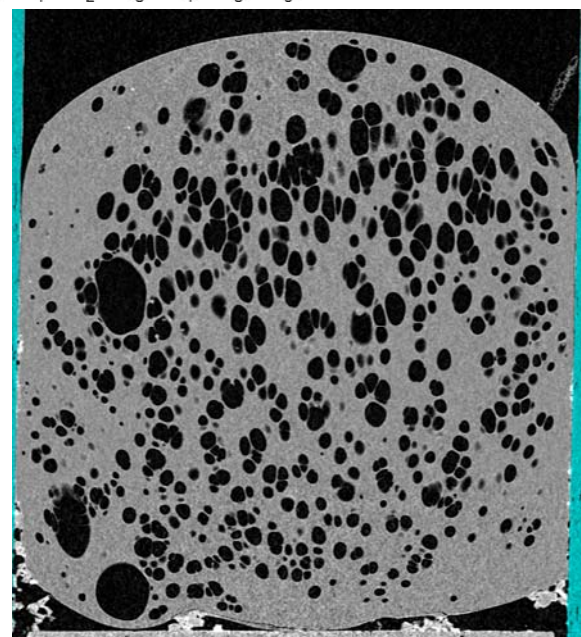
Threshold for obsidian: PV=165



A-1-1 Run-03-10 850°C/50min (051120lm): browse image



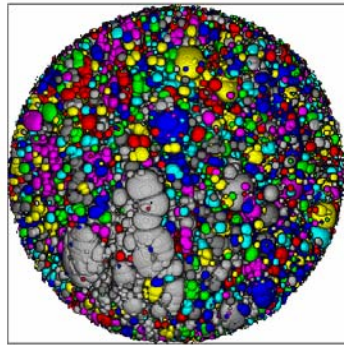
X-slice



Y-slice

A-1-1 Run-03-10 850°C/50min (051120lm): voids

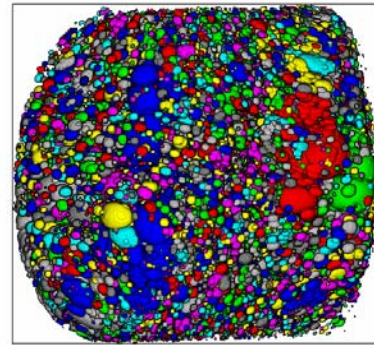
-Z image



+Y

+X

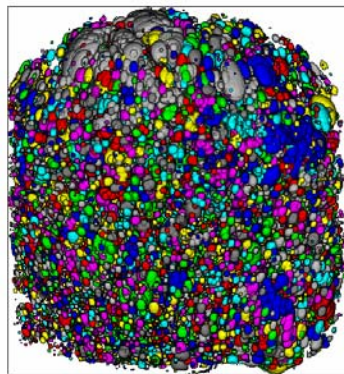
+X image



-Z

+Y

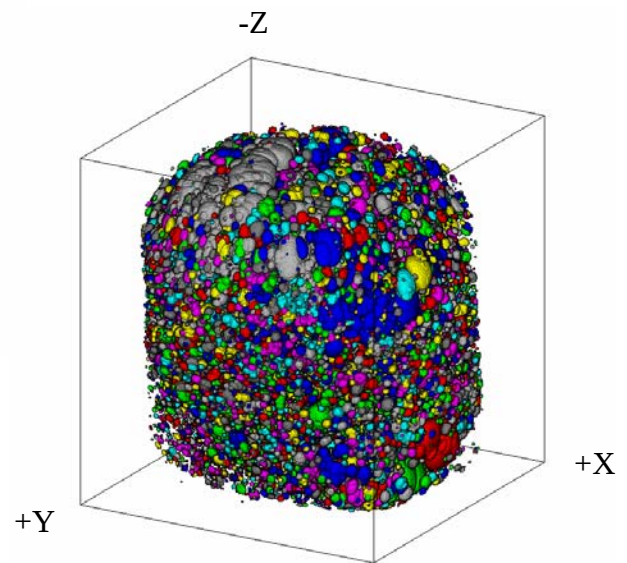
+Y image



-Z

+X

+Y



A-1-1 Run-03-10 850°C/50min (051120lm): void shape

