## 3D Contents / 3D Printer: colorful foraminifera

For v1.36

Show object whose each part is differently colored.

Change to "Surface Rendering" and open "Voxel Process" dialog from "Main Control".

Show All Units Hide All Units	Туре	Rendering	Color	
SurfaceR	Voxel Surface	A		
	Color of Back	all units	ad	
unit	New	)elete		
Measurement	Nonius	Solid Measure	ement	
Voxel Process	Voxel Division	Voxel Filt	er	
Polygon Reduction Section Analysis	Polygon Clipping Particle / Cavity Analysis	Fiber Anal	ysis	
Voxel Rotational Trim	Voxel Trim			
export file Vox	Polygon			
Voxel Process				Coloct "colocted" and proce "Coloct All" button
start point of process: x =	= 289, y = 296, z = 78, va	lue = 20		Select selected and press Select All Dutton
designate center by	dick pping plane			
shape: sphere	✓ of 20 voxel			
Illuctuate voxel voxel	value behavior: decre	ase by value	-	
<ul> <li>smoothing</li> <li>contrast</li> </ul>				
level off (assumi	ng removal of void or inner	particle)		
variation is g finally 0	radually reduced from cent	er to edge,		
selected	inuous object by click			
Select A	I Deselec	t All		
operation	Delete N	on-selected		
Export by I	mages Copy	Polygon		
i all				
Invert Voxel ar Border Value	nd s Fill C	avity		
	Back			
Save Tempora	ry Load the Ten	nporary Data		

All objects are selected.



Press "Copy Polygon" button and close "Voxel Process" dialog.

Voxel Process
start point of process: x = 289, y = 296, z = 78, value = 20
🔘 screen
designate center by click
target dipping plane
shape: sphere voxel
fluctuate voxel value behavior: decrease by value
smoothing
🔘 contrast
level off (assuming removal of void or inner particle)
$\checkmark$ variation is gradually reduced from center to edge, finally 0
selected     select / deselect continuous object by click         Select All         Operation         Delete         Delete Non-selected
Export by Images Copy Polygon
all Invert Voxel and Border Values Fill Cavity
Back
Save Temporary Load the Temporary Data

Uncheck "Disp" of the copied polygon, select the original "Voxel Surface" unit and press "Voxel Division" button to open dialog.

Show All Units Hide All Units		
Disp Name	Type Surface Voxel Surface	Rendering Color
name SurfaceR rendering type A  color  unit Preference	Back Color	Delete
Measurement	Nonius	Solid Measurement
Voxel Process Polygon Reduction Forction	Polygon Clipping	Voxel Filter
Voxel Rotational Trim	Voxel Trim	TIDEL Analysis
export file Voxel	Polygon	

Select "space" as "target" and press "Apply" button.

Voxel Division
target   space   o object
parameters allowable rate (%) 5
divide also exterior space
minimum distance from divide plane's center to edge ignore 50 or more unit: number of voxels ignore 5 or less
Apply Back
rendering type B v opacity (%)
select result select / deselect by click
Select All Deselect All Deselect edge-connected
Update by Result

Candidates for space dividing block (white) are generated. The original objects are drawn green.



Press "Select All" button. All candidates are selected and drawn yellow.



Press "Update by Result" button and close "Voxel Division" dialog.

Voxel Division
target space  object
parameters allowable rate (%) 5
divide only connected with extends space
minimum distance from divide plane's center to edge ignore 50 or more unit: number of voxels
ignore 5 or less
Apply Back
✓ show original rendering type B  opacity (%) 100 ▲
select result
select / deselect by dick
Deselect edge-connected
Update by Result
Copy Result

Press "Voxel Process" button to open dialog.

Disp	Name	Туре	Rendering Color
	ProcPoly 0	Surface	٨
	SurfaceR	Voxel Surface	A
ame	0	color	of all units
	SUITACER		
enderi	ing type A 🔻 colo	r Back	Save Load
enderi	ing type A ▼ colo	r Back	Save Load
enderi	ing type A  color unit Preference	r Back	Save Load
enderi	Ing type A v colo unit Preference	r Back	Solid Measurement
enderi	IsurraceR ing type A v color unit Preference Measurement /oxel Process	r Back New Nonius Voxel Division	Save Load Delete Solid Measurement Voxel Filter
enderi N Pol	JurraceR ing type A   color unit Preference Measurement /oxel Process ygon Reduction	r Back New Nonius Voxel Division Polygon Clipping	Delete Load Delete Solid Measurement Voxel Filter
enderi N Pol	IsurraceR ing type A v colo unit Preference Measurement /oxel Process ygon Reduction ection Analysis	r Back New Nonius Voxel Division Polygon Clipping Particle / Cavity Analysis	Save Load Delete Solid Measurement Voxel Filter Fiber Analysis

Select "all" and press "Invert Voxel and Border Values".



Select "selected", click the inverted object and press "Delete" button.



Chambers are extracted.



Click one of the chambers, press "Copy Polygon" button, then press "Deselect All" button. Repeat this to every chamber. After that, close "Voxel Process" dialog.



Uncheck "Disp" of the original "Voxel Surface" unit and the first copied polygon. Change color of every copied chambers differently.

Disp	Name	Туре	Rendering Color
<b>v</b>	ProcPoly_4 ProcPoly_3	Surface Surface	A A
	ProcPoly_2	Sarface	
	ProcPoly_1	Surface	A
	ProcPoly_0	Surface	В
	SurfaceR	Voxel Surface	A
name renderi	ProcPoly_1 ng type A	or Back	of all units
name renderi	ProcPoly_1 ng type A v colo unit Preference	Back Si	of all units ave Load Delete Solid Measurement
name renderi	ProcPoly_1 ng type A v colo unit Preference Measurement	Back     Color of     Si     New     Nonius     Voxel Division	of all units ave Load Delete Solid Measurement
name renderi	ProcPoly_1 ng type A color unit Preference Measurement /oxel Process ygon Reduction	Back     Color of     Si     New     Nonius     Voxel Division     Polygon Clipping	of all units ave Load Delete Solid Measurement Voxel Filter
name renderi	ProcPoly_1 ng type A colo unit Preference Measurement Moxel Process ygon Reduction ection Analysis	r Back Si New Si Nonius Voxel Division Polygon Clipping Partide / Cavity Analysis	of all units ave Load Delete Solid Measurement Voxel Filter Fiber Analysis



All chambers are differently colored.

Show A	Il Units Hide All Un	its		
Disp	Name	Туре	Rendering	Color 🔺
	ProcPoly 14	Surface	A	=
<b>V</b>	ProcPoly_13	Surface	A	
1	ProcPoly_12	Surface	A	
<b>V</b>	ProcPoly_11	Surface	A	
<b>V</b>	ProcPoly_10	Surface	A	
<b>V</b>	ProcPoly_9	Surface	A	-
•				P.
	Preference	New	Delete Solid Measure	ement
	icabar emerie			
	/oxel Process	Voxel Division	Voxel Filt	er
Pol	ygon Reduction	Polygon Clipping		
Se	ection Analysis	Particle / Cavity Analysis	Fiber Anal	ysis
Voxe	el Rotational Trim	Voxel Trim		
	export fi	le Voxel Polygon		



Check "Disp" of the first copied polygon and change "Rendering Type" to "B" or "C". Also changing "Color" may improve view.

sp Name	Туре	Rendering	Color	*
ProcPoly_4	Surface	A		
ProcPoly_3	Surface	Α		
ProcPoly_2	Surface	A		
ProcPoly_1	Surface	Α		-
ProcPoly_0	Surface	В		-
SurfaceR	Voxel Surface	A		Ŧ
			•	
ne ProcPoly_0 dering type B v col		of all units Save Loa	ad	
ne ProcPoly 0 dering type B v col unit Preference Measurement	or Back	of all units Save Loa Delete Solid Measur	ad	]
ne ProcPoly 0 dering type B  Col unit Preference Measurement Voxel Process	Color     Back     Solution     Nonius     Voxel Division	of all units Save Los Delete Solid Measure Voxel Filt	ad ement er	
ne ProcPoly 0 dering type B  Col unit Preference Measurement Voxel Process Polygon Reduction	New       Nonius       Voxel Division       Polygon Clipping	of all units Save Los Delete Solid Measur Voxel Filt	ement er	
ne ProcPoly 0 dering type B  Col Unit Preference Measurement Voxel Process Polygon Reduction Section Analysis	New       Nonius       Voxel Division       Polygon Clipping       Particle / Cavity Analysis	of all units Save Loa Delete Solid Measure Voxel Filt Fiber Anal	ement er ysis	



Select "File (F)" > "Save molcer file (S)" in menu bar to save created data.

