



3DXpert™

3DPRINTING EXERCISE

Surface Lattice

Tutorial_V8- Updated: 14,0000,1587,729

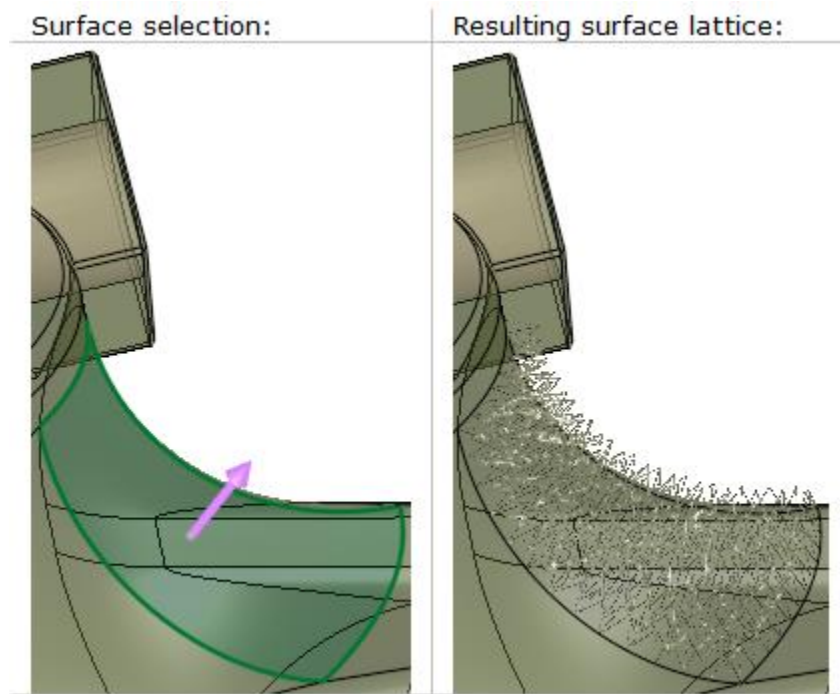


3D SYSTEMS®

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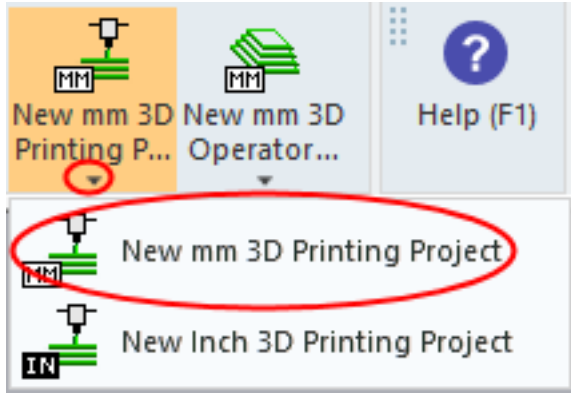
Part 1 – Surface Lattice	3
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Surface Lattice – Create a surface lattice on top of the surface of the object. This is usually used for medical implants as this kind of texture makes it easier for organic tissues (namely bone) to attach to it.

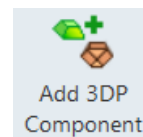
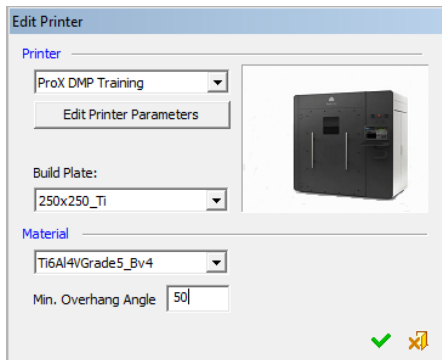


Part 1 – Surface Lattice

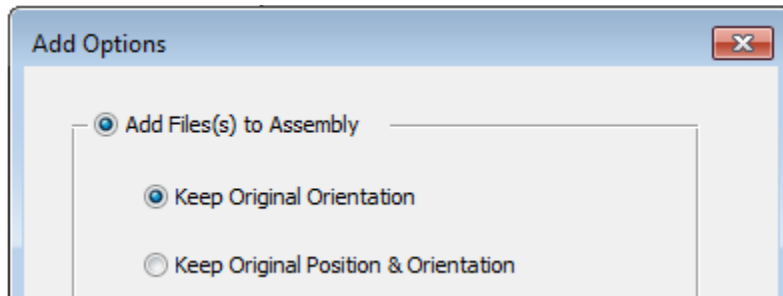
1. Let's open a new 3DPrinting project.
2. From the menu bar press the 'New 3DPrinting Project' button.



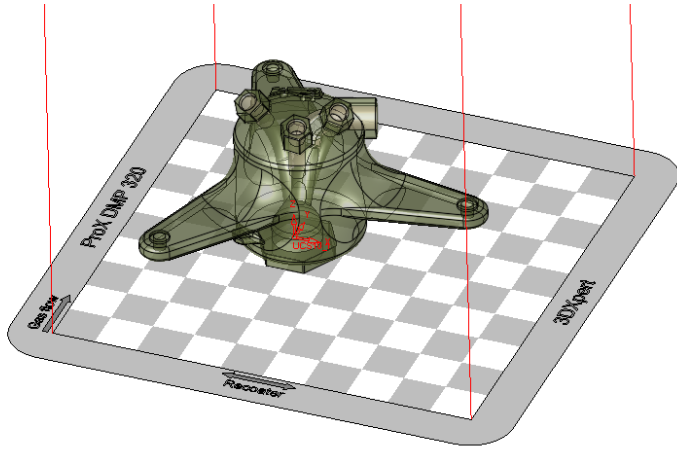
3. Select '**Edit Printer**' and define the printer you are going to work with by selecting it from the list of available printers. In this exercise, we will use the **ProX DMP Training** from 3D Systems.
Set the Parameters as below:



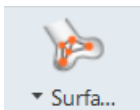
4. Add the part we are going to print. Press the Add 3DP Component . As the 3DXpert explorer opens up, browse and select the file **Manifold_Ex3.elt**. Press 'Select' or double click the file.
5. Select '**Keep Original Orientation**' and **OK**.



The part has now been added to the project.

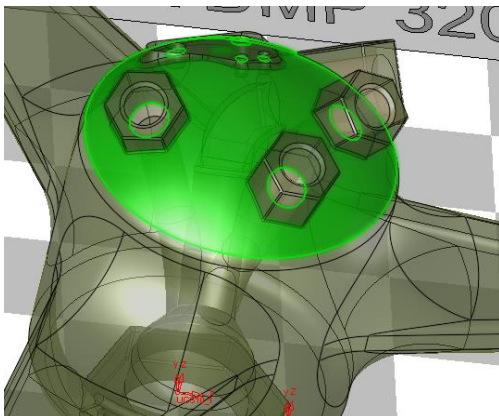


6. Let's begin with Surface Lattice. From the Guide Bar select the **Create Lattice** button and switch to **Surface Lattice**.



This is a split button, after selection Surface Lattice becomes the predominant option on the Guide.

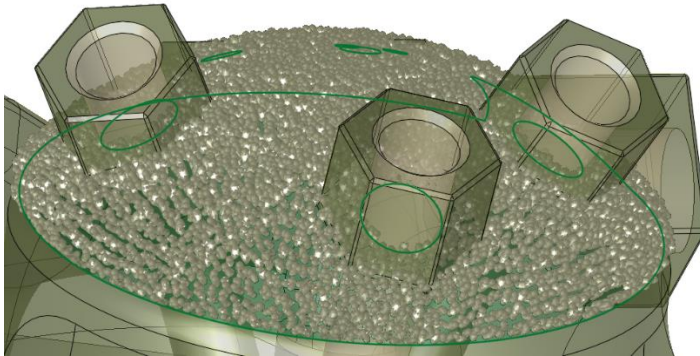
7. Pick the upper face of the model and press the middle mouse button to move to the next stage.



8. Click the **preview** button to see the elements added on the face.

You can control the **size** of the elements themselves, the Cell size (which is the distance between them) and the **height** of the elements.

You can also control whether they are **smooth** (rounded) or **sharp** and finally you can control the **cell type** out of the available cell types.



9. Set the following parameters:

Cell Type=Tetrahedron

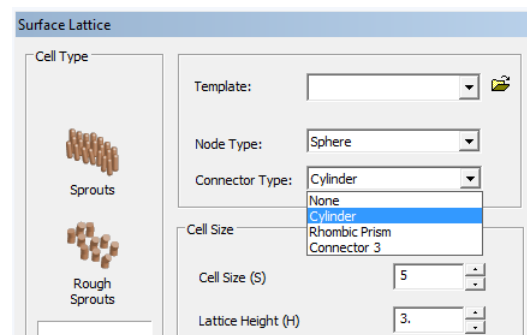
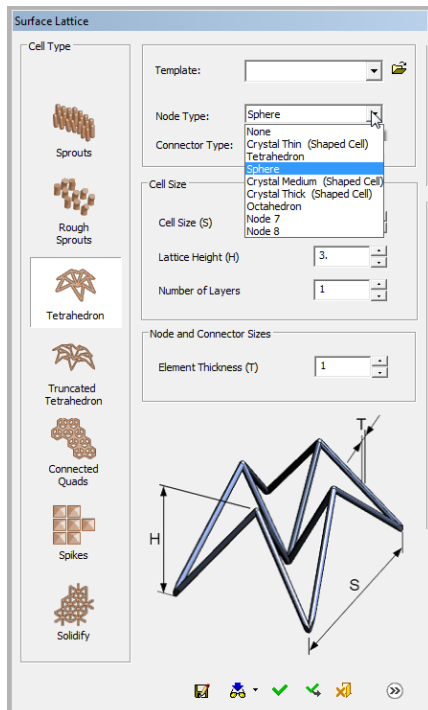
Cell Size=5

Lattice Height=3

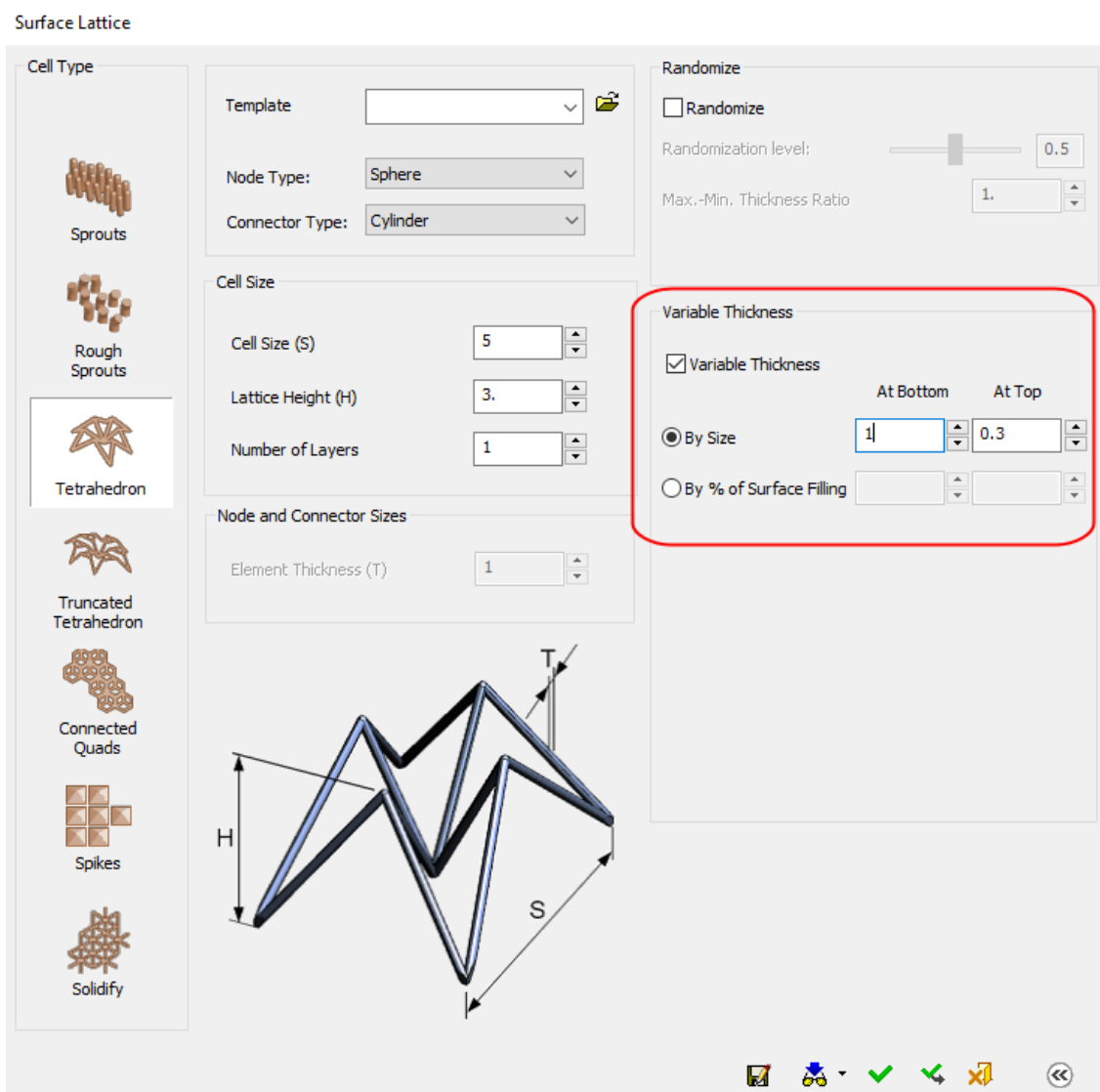
Number of Layers=1

Element Thickness = 1

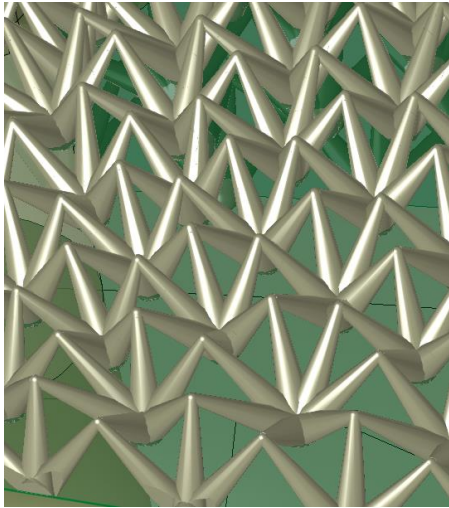
Switch between the different 'Node Type' and 'Connector Type' to see the differences. Remember that you should press the Preview button to see the result or set Auto Preview.



10. For Tetrahedron lattice shape, you can also set variable element thickness.
Set to Smooth, check on the Variable box and set a top thickness of **0.3**.

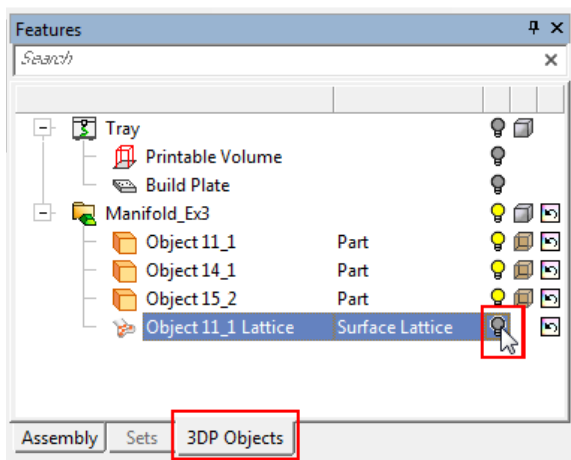


11. Press the Preview button and examine the result: the lattice gets narrower along it height.



12. Press OK.

13. Hide the Surface Lattice Object. This can be done from the the 3DP Objects tab, as you click the object's light bulb.



End of Exercise.