



# 3DPRINTING EXERCISE

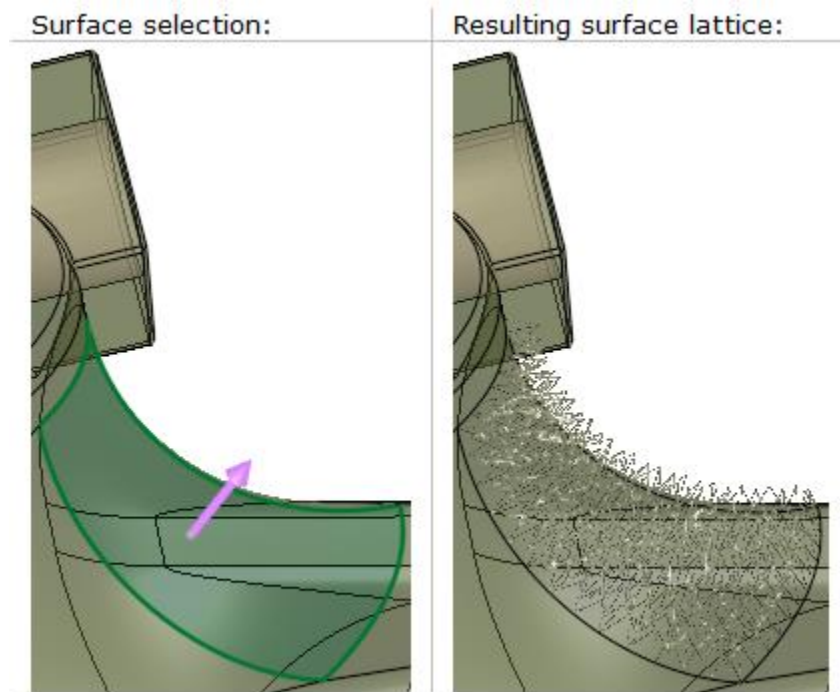
## Surface Lattice

Tutorial\_V9- Updated: 14,0100,1592,863( SP1 )

## Contents

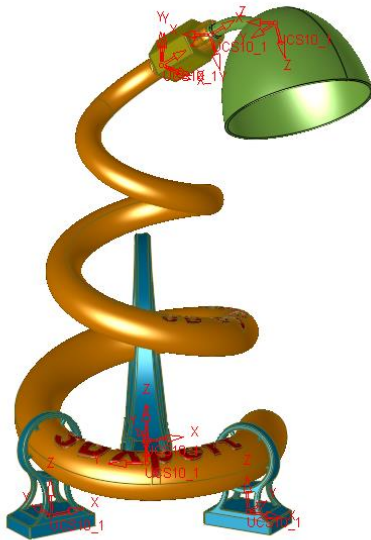
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**Surface Lattice** – Create a surface lattice on top of the surface of the object. This is usually used for medical implants as this kind of texture makes it easier for organic tissues (namely bone) to attach to it. It is also use as heat exchanger.

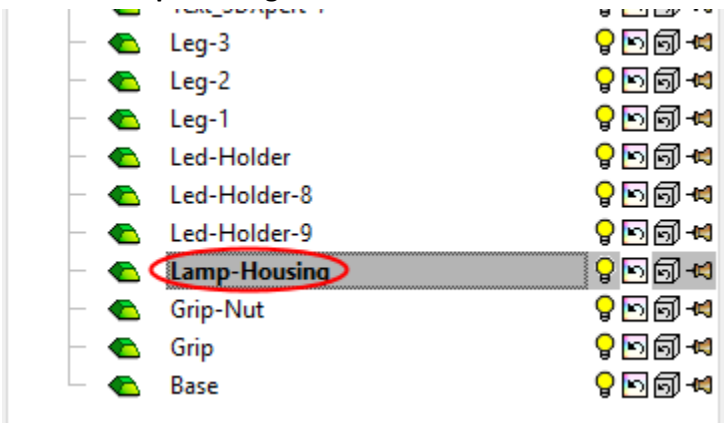


## Part 1 – Surface Lattice

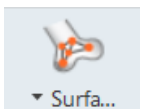
1. Unpack the file **Desktop-Lamp\_ASSM.ctf**. Load the assembly.



- 2.
3. Let's begin with Surface Lattice.
4. Activate the **Lamp-Housing**

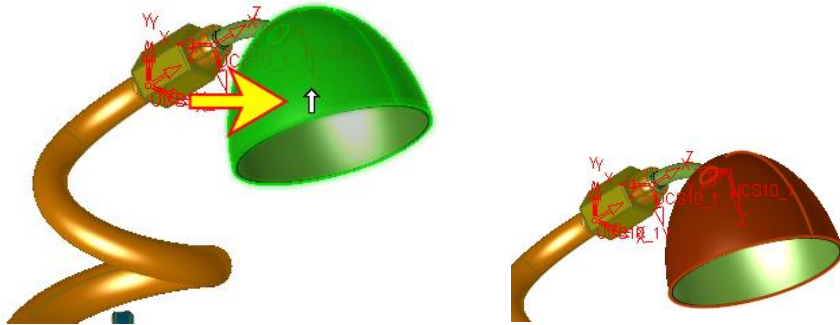


5. From the Guide Bar select the **Create Lattice** button and switch to **Surface Lattice**.



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

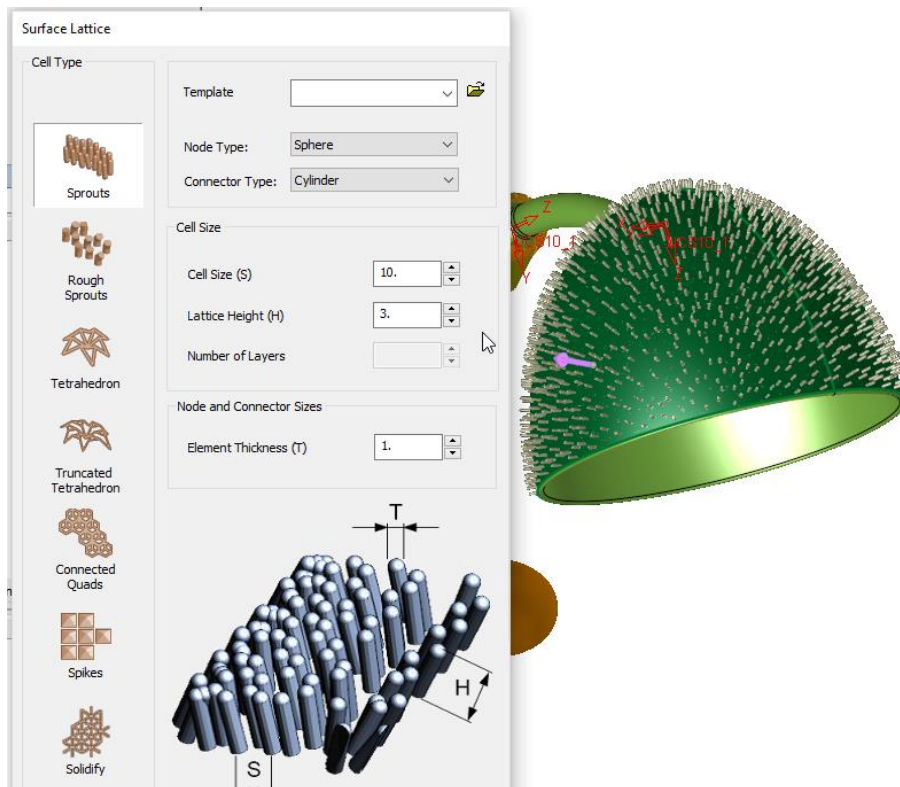
6. Pick the upper face of the model and press the **middle mouse** button to move to the next stage.



7. 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.



8. Set the following parameters:

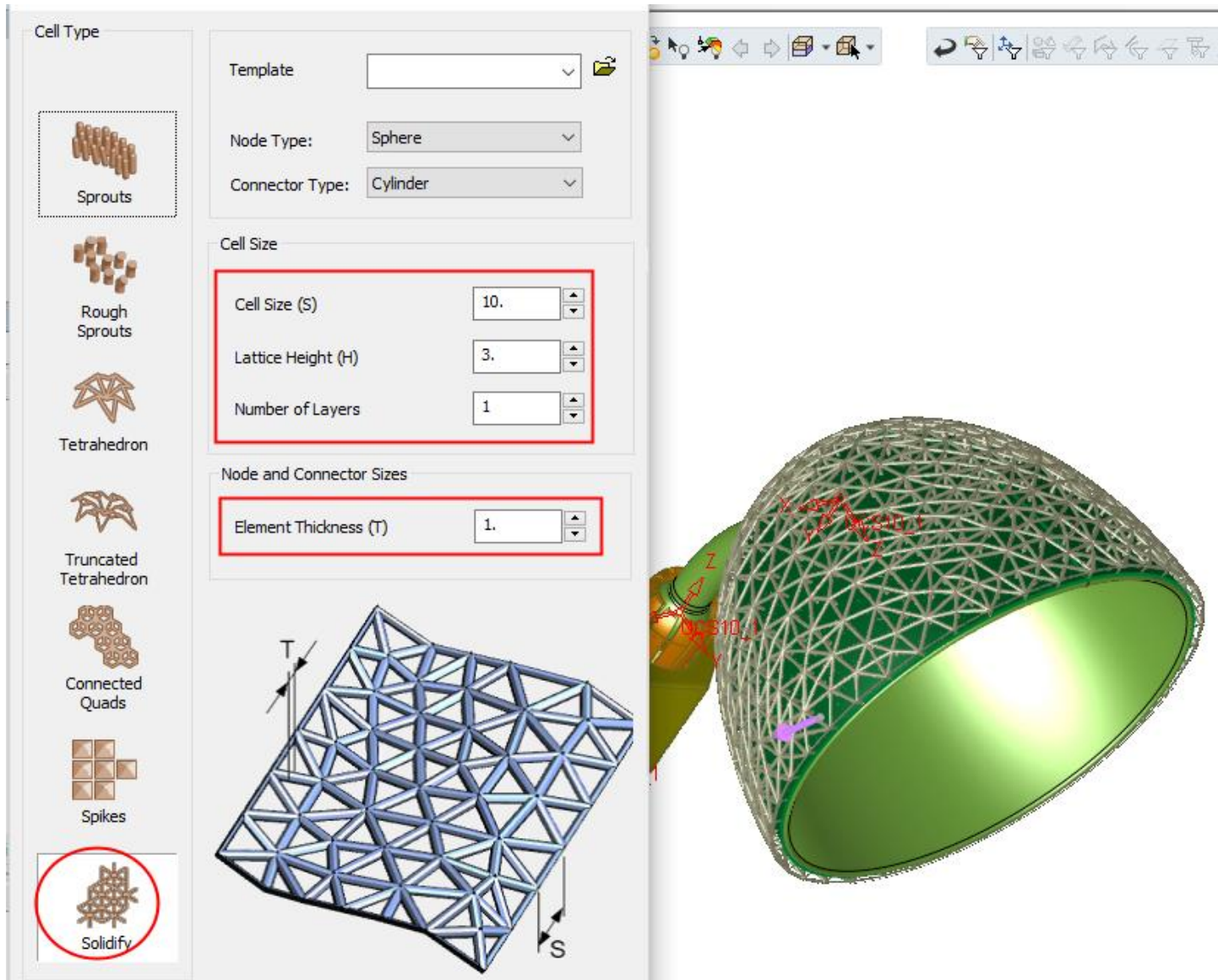
**Cell Type**=Solidify

**Cell Size**=10

**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.

## Surface Lattice


Cell Type



Sprouts



Rough Sprouts



Template

Node Type: Crystal Medium (Shaped)

Connector Type: Crystal Thin (Shaped Cell)

Cell Size


Cell Size (S)

Lattice Height (H)


Number of Layers

## Surface Lattice

Cell Type



Sprouts



Rough Sprouts

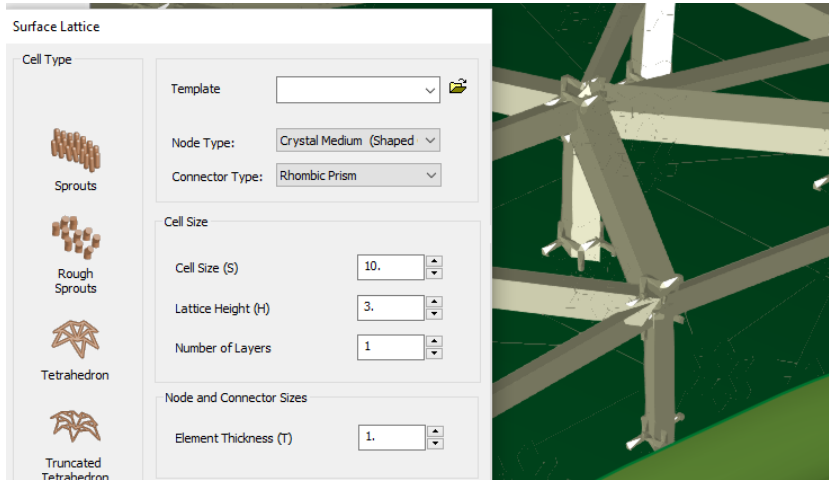
Template

Node Type: Crystal Medium (Shaped)

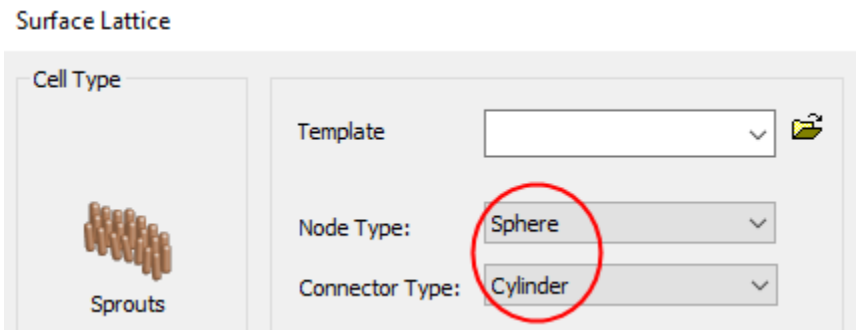
Connector Type: Rhombic Prism

Cell Size

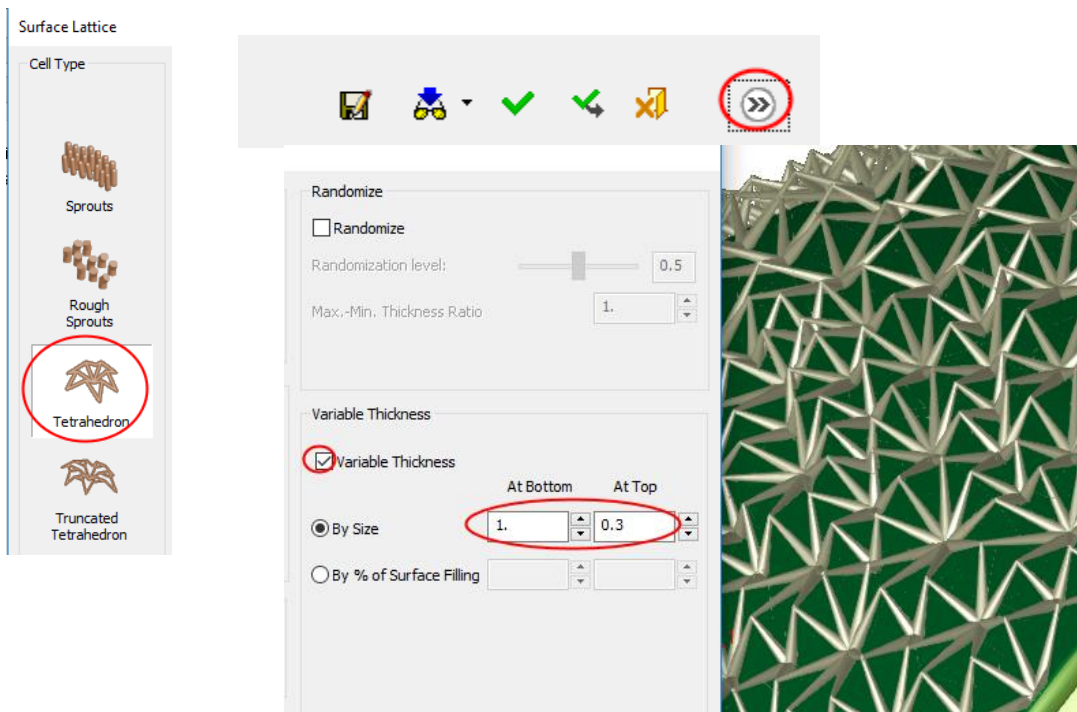
Cell Size (S)



9. Set the Node and connector types as shown in the picture below:

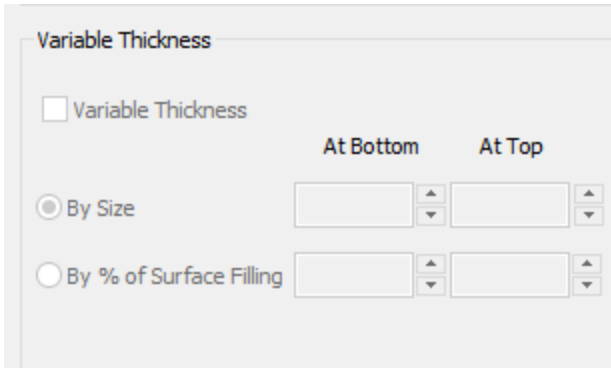


10. For Tetrahedron lattice shape, you can also set variable element thickness.  
Set to Smooth, check on the Variable box and set a top thickness of **0.3**.





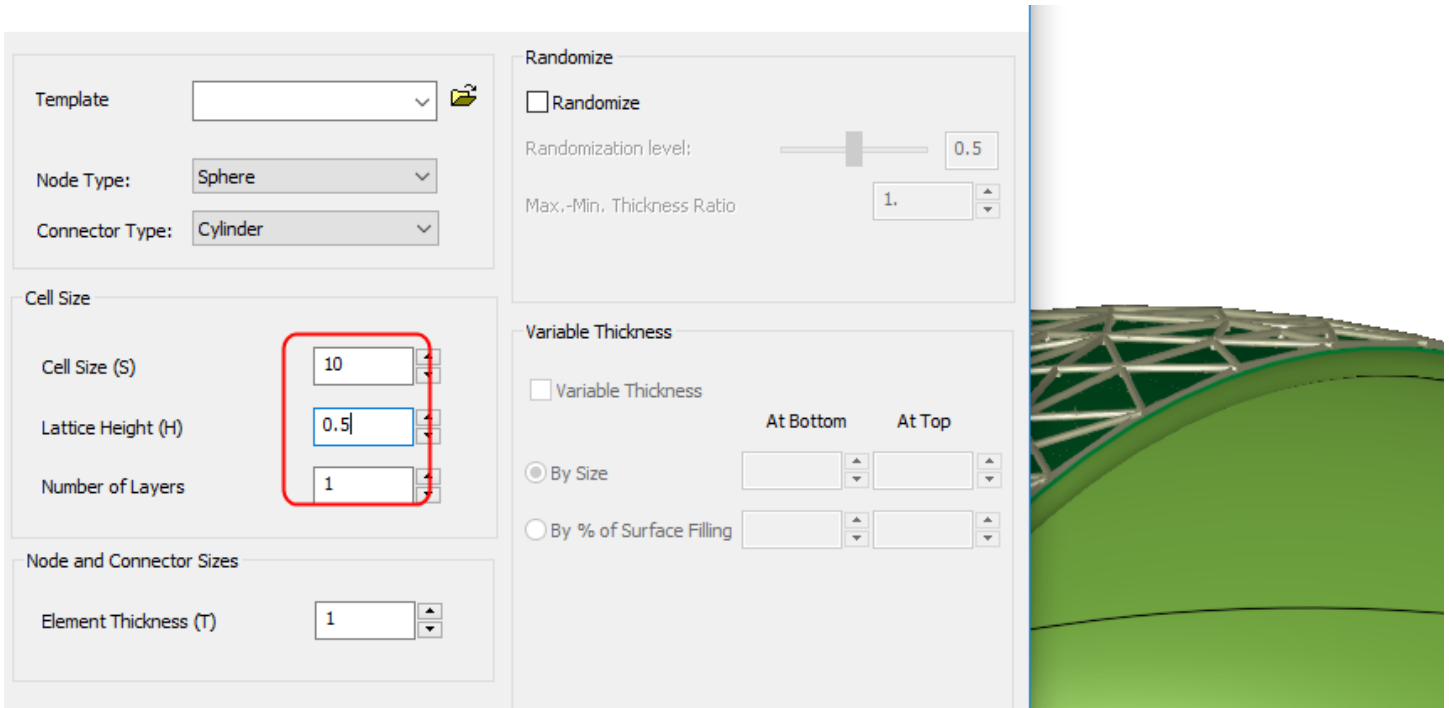
11. The lattice gets narrower along it height.
12. Uncheck the Variable Thickness.



13. Select the option: Solidify

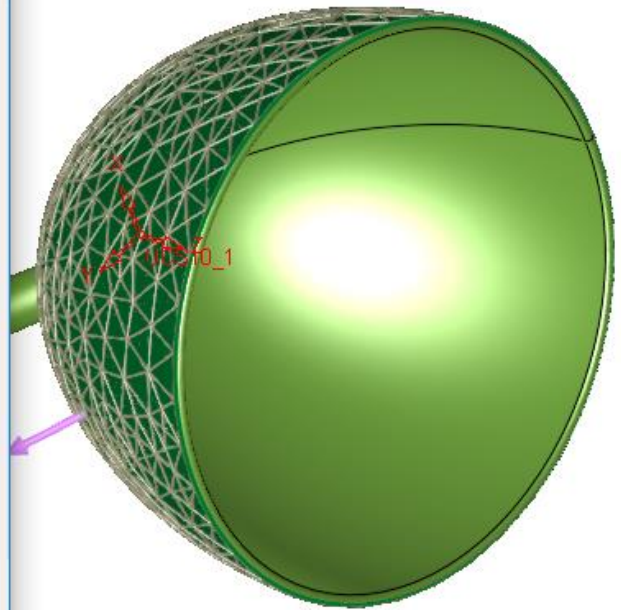
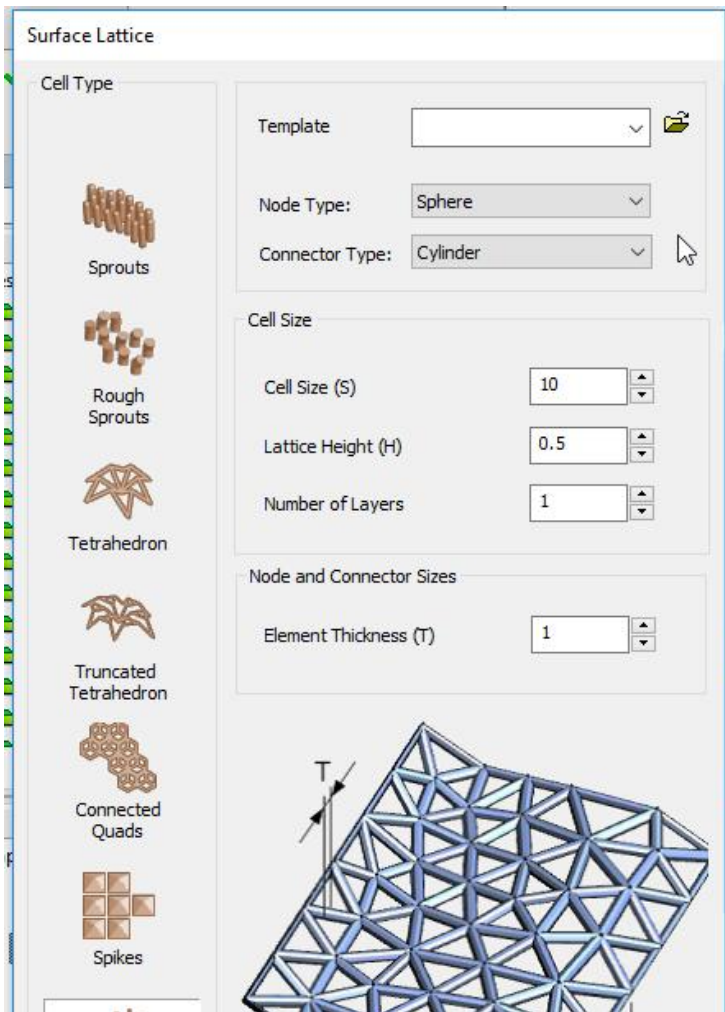


14. Set the Lattice height to 0.5

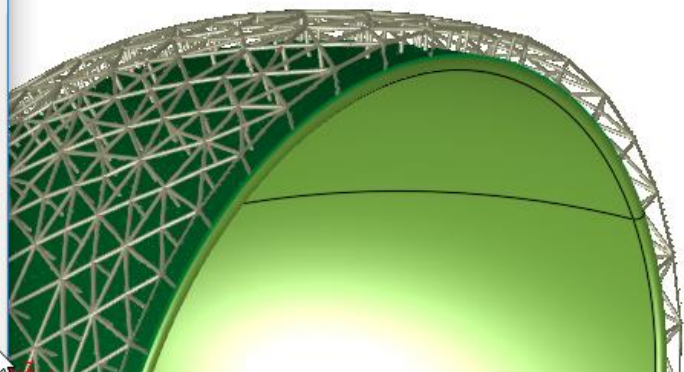
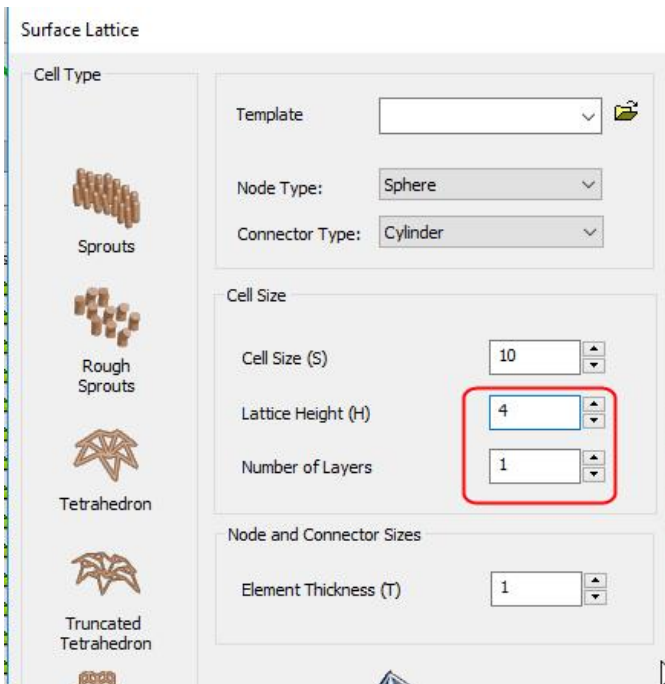


15. Note that the lattice is closed to the object faces.



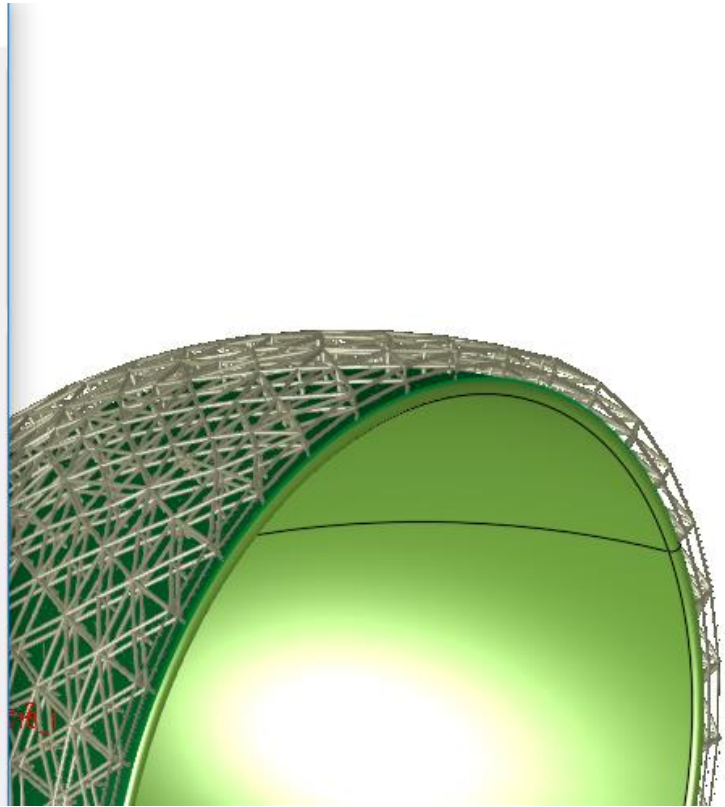
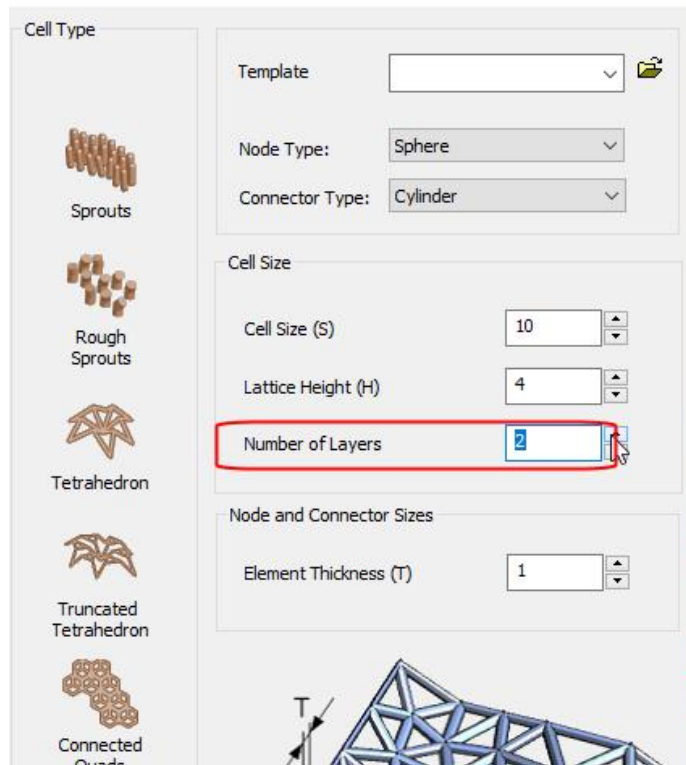


16. Set the Height of the lattice to 4 to enable a better heat exchange.



17. Set the number of layers to 2.

Surface Lattice



18. Press OK.

End of Exercise.