

University of Belgrade
Faculty of Mechanical Engineering
Department of Production Engineering
Laboratory for CAD/CAM



Winter School on Trends on Additive Manufacturing for Engineering Applications

Practical session 2 – Testing of specimens (static, dynamic, fracture toughness)

Wednesday, 27th of January 2021

15-18h

ONLINE

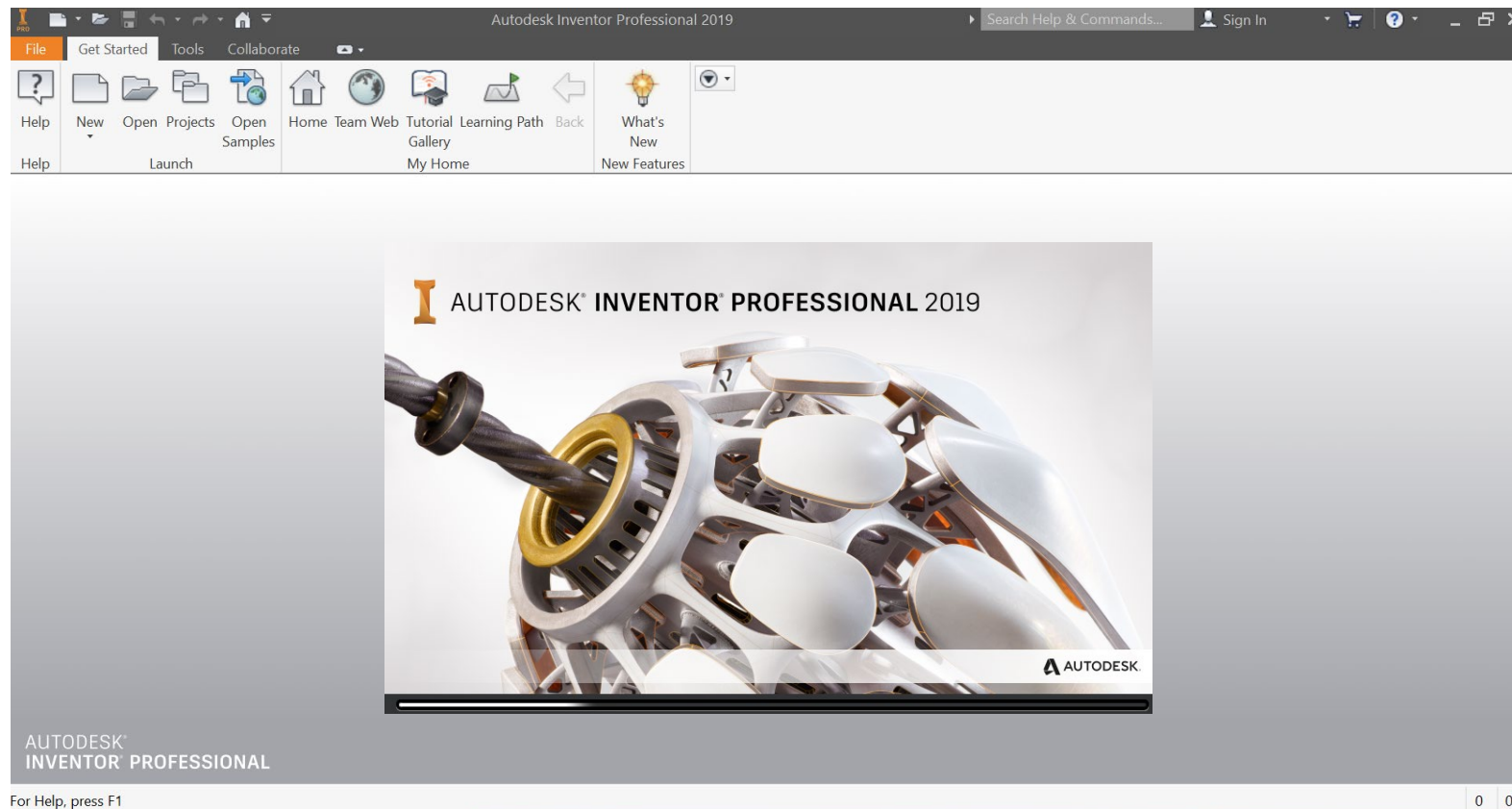
Speaker: Goran Mladenović

Computer aided design - CAD

- It must be used one of CAD software package for making 3D model of specimens.
- Every CAD software has own file format which remember model three and it can be used later for additional changing.
- After finishing of design and saving 3D model of specimen must be saved as STL file (Stereolithography) so it should be possible to print it later.
- Part saved in this file format is presented as triangles mesh.
- It is possible to chose tolerances of part because it is present loss in quality due exporting in STL file format.
- It isn't possible to change part in STL file format, or it is very difficult.

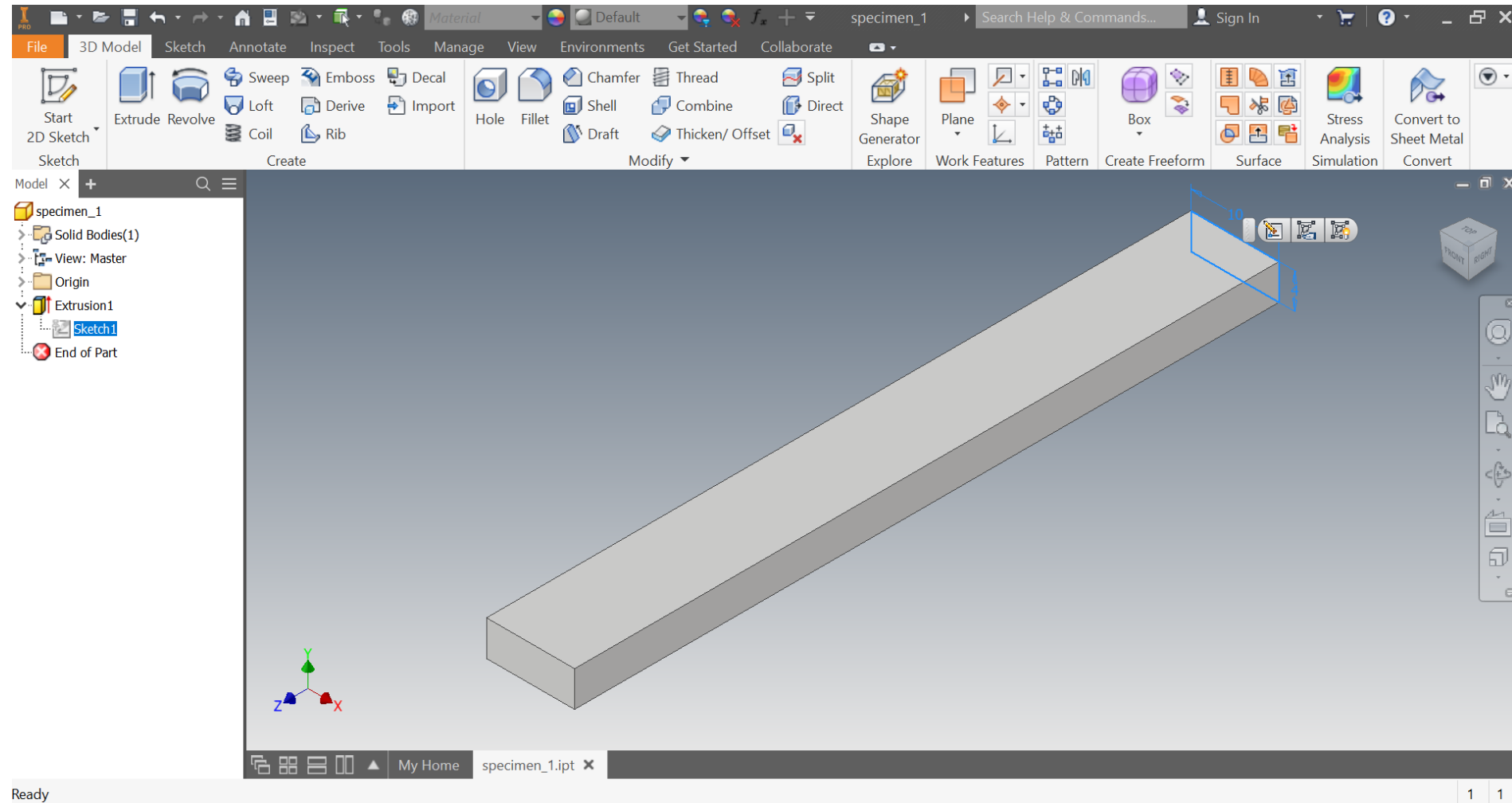
Used CAD software

- AUTODESK Inventor Professional 2019



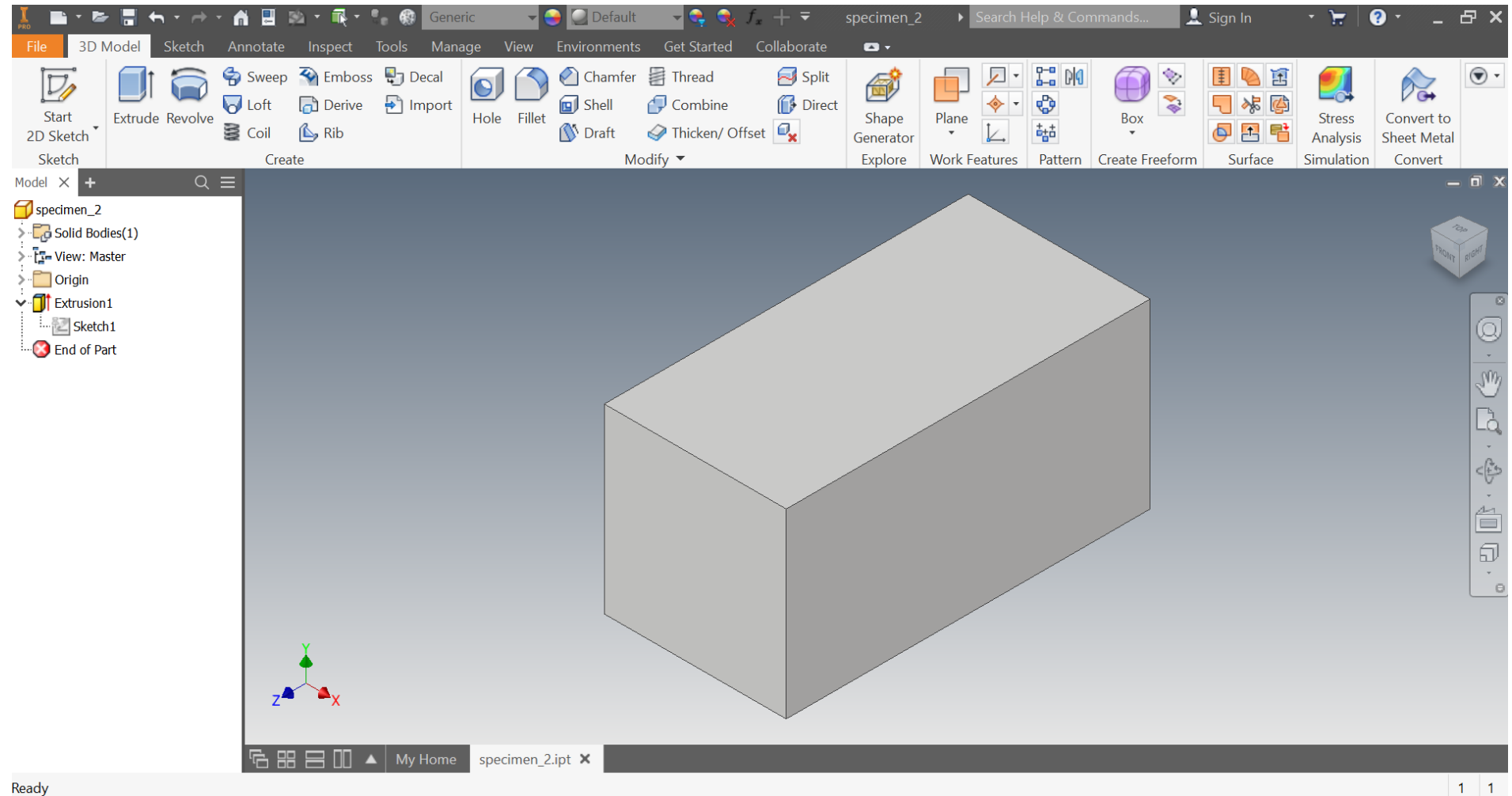
Three point bending test specimen

- 1 sketch
- 1 extrude feature



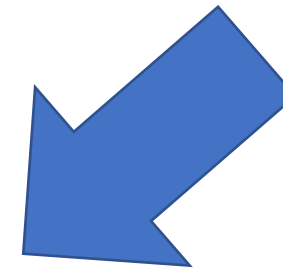
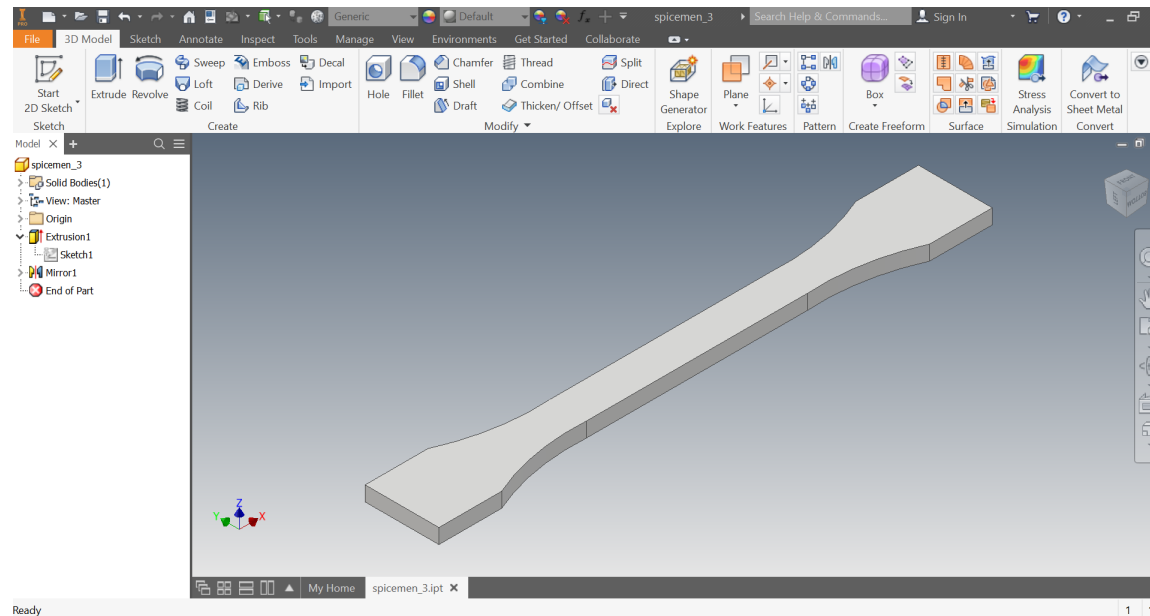
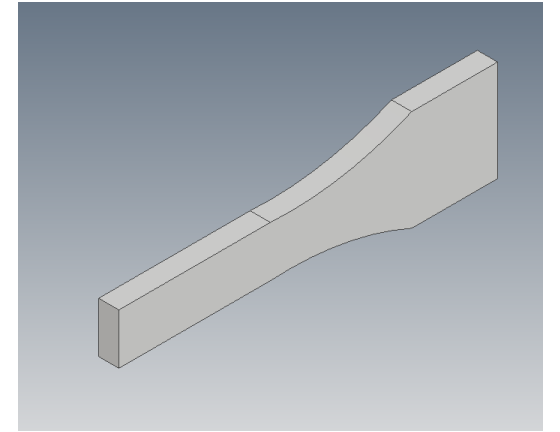
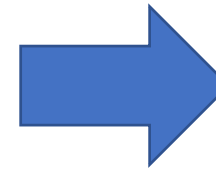
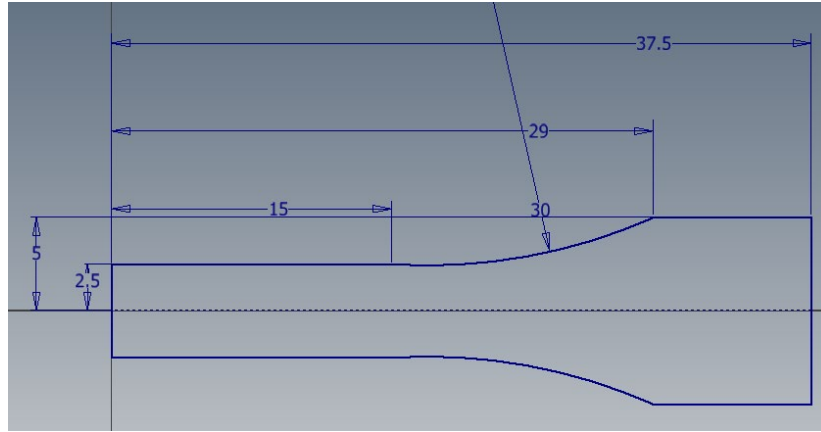
Compression test specimen

- 1 sketch
- 1 extrude feature



Tensile test specimen

- 1 sketch
- 1 extrude feature
- 1 mirror tool



Exporting to STL file format

STL File Save As Options ✕

Format

Binary ASCII

Units Structure

millimeter One File

Resolution

High Medium Low

Custom Brep

Surface Deviation: 0.005000 %

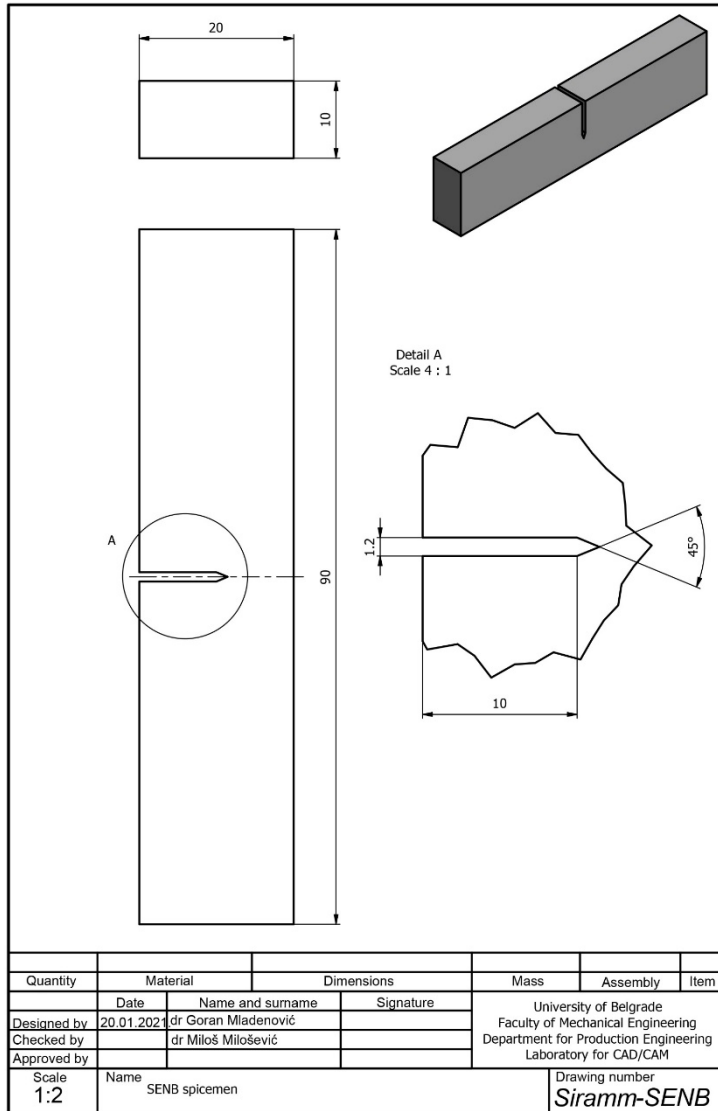
Normal Deviation: 10.000000

Max Edge Length: 100.000000 %

Aspect Ratio: 21.500000

Allow to Move Internal Mesh Nodes Export Colors

Work for practise



You can download 30 days free software from:

<https://www.autodesk.com/products/inventor/free-trial?plc=INVPROSA&term=1-YEAR&support=ADVANCED&quantity=1>

File size iz 15GB

Autodesk logo and navigation menu (Products, Support, Learn, Community). The main heading is 'Inventor'. A 'DOWNLOAD FREE TRIAL' button is highlighted with a blue arrow. The page content includes 'Free trial', 'Try Inventor free for 30 days', and 'Professional-grade 3D CAD software for mechanical design.' A 'Did you know?' section mentions a 30-day trial and a monthly subscription option.

Thank you for attention

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