

ChemDraw to Blender 3D

Getting Started

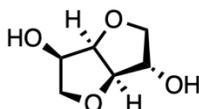
Before you get started, here's a list of programs you'll need to download:

1. ChemDraw (paid; available through the university)
2. [Avogadro](#) (free program)
3. [Blender](#) (free program)
4. A computer mouse with scroll wheel or 3 button mouse (mouse with a scroll wheel)

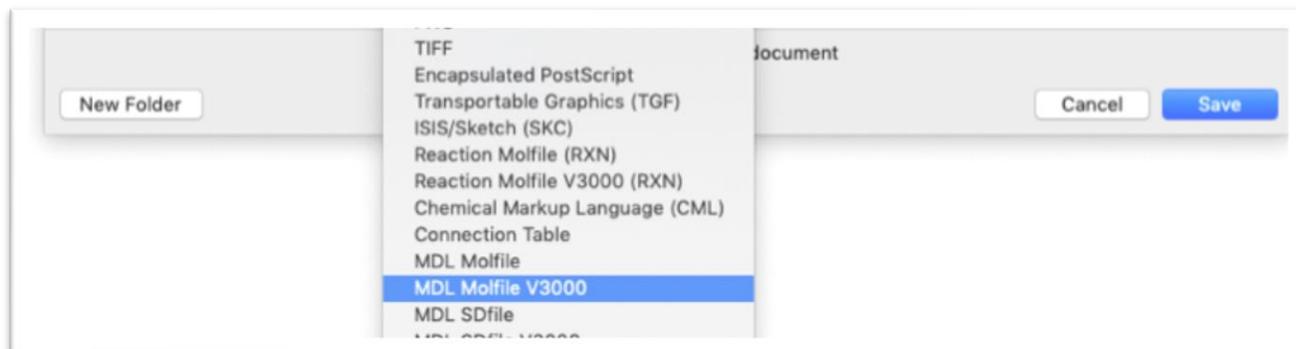
Start in ChemDraw

Open ChemDraw and follow these steps –

1. Draw a molecule in ChemDraw



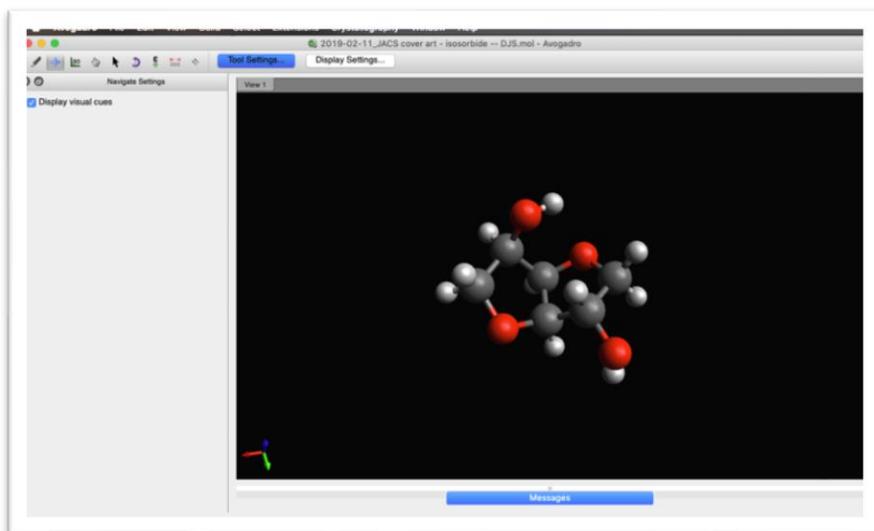
2. File > Save As > choose file type "MDL Molfile V3000"



Open File in Avogadro

If you haven't already, download a version of Avogadro. You'll use this to make a 3D model from your 2D molecule. You can certainly stop at this stage if you don't need further artistic customization (coloring, texturing, lighting, or animation). But if you do, keep reading.

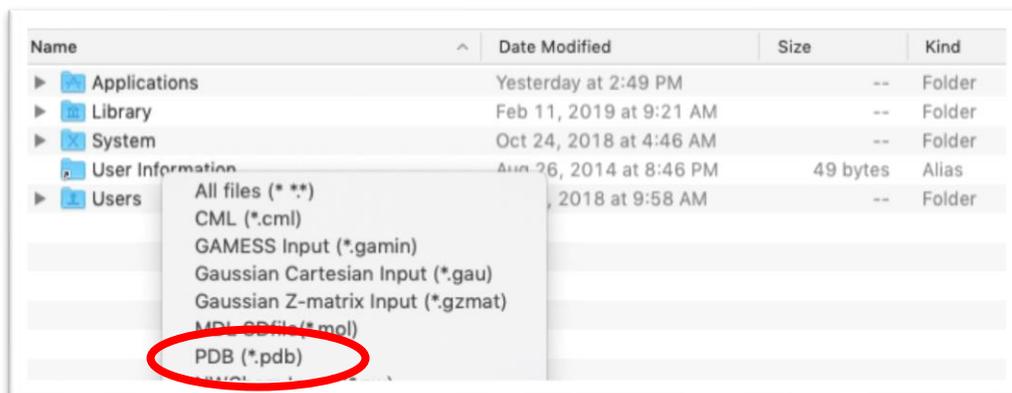
1. Open Avogadro
2. Drag your chemdraw/.cdxml file into avogadro



3. Double-check

bonding to make sure it's correct

4. You're ready to export again.
 - a. Go to file > save as > PDB
 - b. For some reason I have to manually write in the .pdb file extension. If for some reason your dropdown menu isn't applying this automatically – try that.



Customize in Blender

*** A Note before you get started in Blender -*

Blender isn't something you learn overnight. It's a complex design tool for 3d modelers and animators. But if you like tinkering and want to do something more artistic with your structures, it may be worth learning over time.

My objective here is to get you started with some of the basics.

Reach out to the CSP designer for help: John Beumer, beumer@umn.edu.

Prepare your blender software for import

Go to Edit > Preferences > select the Add-Ons tab

In the search box, search for "pdb"

Check the following two options and save.

- Import-Export: Atomic Blender – PDB/XYZ

Importing your .pdb files to blender:

1. To import your structure, go to File > import > and select your .pdb file but **do not** import yet

2. [Adjust your import settings first](#) (video is set to 4:43 at the import stage) – you can also look to the text directions below if that's easier:

- Change "Balls/Atoms" > "type of ball" to mesh
- Next, in order to actually see the sticks you need to reduce the size of the spheres
- Change the "scaling factor" > "balls" to .5
- Then reduce the size of the sticks, scroll down to "sticks /bonds" and change "radius" to .1 and tick the radio button box "bonds"
- You may also want to save this preset for later so you don't have to do it again
- So scroll back up to the top and next to "operator presets" click the plus sign "+" and give it a meaningful name
- Now you can import, select the import button "import protein ... (*.pdb)"

Once you're back in the blender interface, we'll want to turn this structure into editable pieces.

- Click "a" to select all
- Click the "object" button on the interface and in the dropdown select "apply" > "make instances real"
- This will allow you to edit parts as individual objects, select vertices and customized meshes

3. And now your structure is in blender!

4. Once you've got your design in blender, the sky's the limit in what you can do artistically with your structure.

You'll need a 3 button mouse here because it's much easier to take advantage of view navigation in blender this way.

- Use the scroll wheel to zoom in and out
- Press shift + hold down scroll wheel + drag mouse to move around

Check out Blender's official youtube for the best [introductory videos for version 2.8](#)