

Installation Guide

Units used in Blender.

Time: Second, s

Length: Micron, μm

Diffusion Constant: $\text{cm}^2 \text{s}^{-1}$

The units of the reaction rate for uni- and bimolecular reactions are

- $[\text{s}^{-1}]$ for unimolecular reactions,
- $[\text{M}^{-1} \text{s}^{-1}]$ for bimolecular reactions between either two volume molecules or a volume molecule and a surface (molecule), and
- $[\mu\text{m}^2 \text{N}^{-1} \text{s}^{-1}]$ for bimolecular reactions between two surface molecules.

Here, M is the molarity of the solution and N the number of reactants.

For more details refer to the pdf, MCellQuickReferenceGuide.pdf

1. Go to www.mcell.org
 2. Go to *DOWNLOADS* on the top right.
 3. Download MCell and CellBlender according to the configuration of your system.
 4. Read the installation instructions for MCell from the link provided on the download page.
- OR** you can use the following link,
<http://www.mcell.psc.edu/tutorials/installs.html>

Now you must have installed MCell.

5. Go back to www.mcell.org, and click on the *TUTORIALS* (On the top of the page).
6. Click on *1. Required Software*.
 - You would find the second bulletin as *Blender 7.4*. Download it.
7. Now go to MCell Installation using the following link.
<http://www.mcell.psc.edu/tutorials/installs.html#cellblender-installation-all-platforms>

You must installed Blender and activated CellBlender in Blender.

Now we need to activate MCell in Blender and we would be ready to work with Blender!

8. Open Blender.
9. Go to *CellBlender*. (Given on a vertical bar on the extreme left of the Blender window.)
10. *Initialize CellBlender*.
11. Go to *Preferences*.
12. Go to *Set Path to MCell Binary* and select the mcell file from the directory where you have stored it.

This connects MCell to Blender.

Now you can proceed with the Tutorials given on www.mcell.org

PS: Come back to this document after you have completed your first tutorial i.e. *Single Molecule Diffusion*.

1. Go to *Run Simulation*.
 2. Under *Output / Control Options*, you would see *Start Seed* and *End Seed*. You can change it to the number of desired seeds.
 3. Change the Export Format to Single Unified MCell MDL File.
 4. Now Run the Simulation and go to visualisation Settings.
 5. Click on Read Viz Data. Just below that you would see the path where your data is being stored.
 6. When you go to the directory, you would find a directory named <Filename>_files. This contains,
 - main.mdl file, which contains the geometry as well as the reactions you have defined
 - React_data: data being recorded in specified time steps, seeds. This data can be plotted by using any standard plotting software.
 - Viz_data: Your visualisation data.
-