



Process Simulator

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Salient features - Process Simulator

The process simulator performs step-by-step simulation of semi-conductor fabrication process flow. It can –

- Simulate etching, deposition, implantation, and annealing steps on the 2D and 3D structures.
- Silicon oxidation is simulated, if oxidative gas is present.
- Implant tables used for modeling implantation.
- *Three-stream model* used for dopant diffusion. Simpler and faster models are also provided.
- Python interface for convenient scripting of the flow.
- Python interface of structure generator can be used.
- *Pseudo-process mode* enables running fast 2D and 3D process simulations by performing pure geometric operations.
- A graphic-user-interface is provided for convenient creation of the structure and the process-flow.

Python Interface

- Python-interface enables scripting and parametrization of the process flow generation task.

```
import process as pr
dioPro = pr.Process (...)
...
dioPro.setRegion (...)
...
dioPro.createDeviceMesh ()
dioPro.deposit (...) #dep oxide
dioPro.mask (...) #set mask
dioPro.etch (...) #masked etch
dioPro.implant (...) #masked implant
dioPro.etch (...) #strip etch
dioPro.anneal (...) #anneal wafer
```

- Structures after simulating each step in *pseudo-process mode* are shown on the right side.

Pseudo-process Mode

- Pseudo-process mode enables running fast 2D and 3D process simulations by performing pure geometric operations.
- Highly useful in *iterative* process-flow development.
- Easy use: Enable *pseudo-process mode* in initialization.
- Add the process steps exactly as before.
- Save the structure after *each process step*.
- Visualize the structure using a STEP viewer.

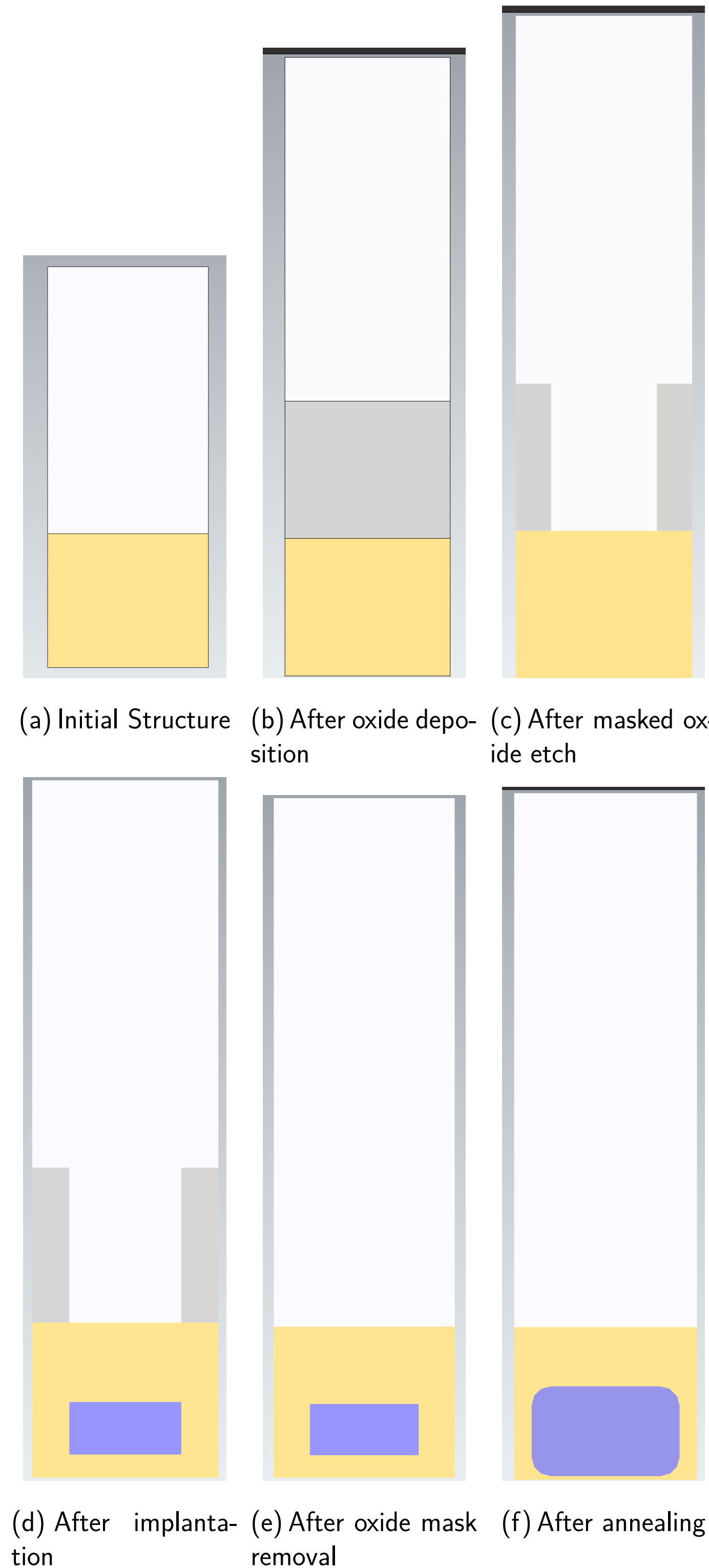
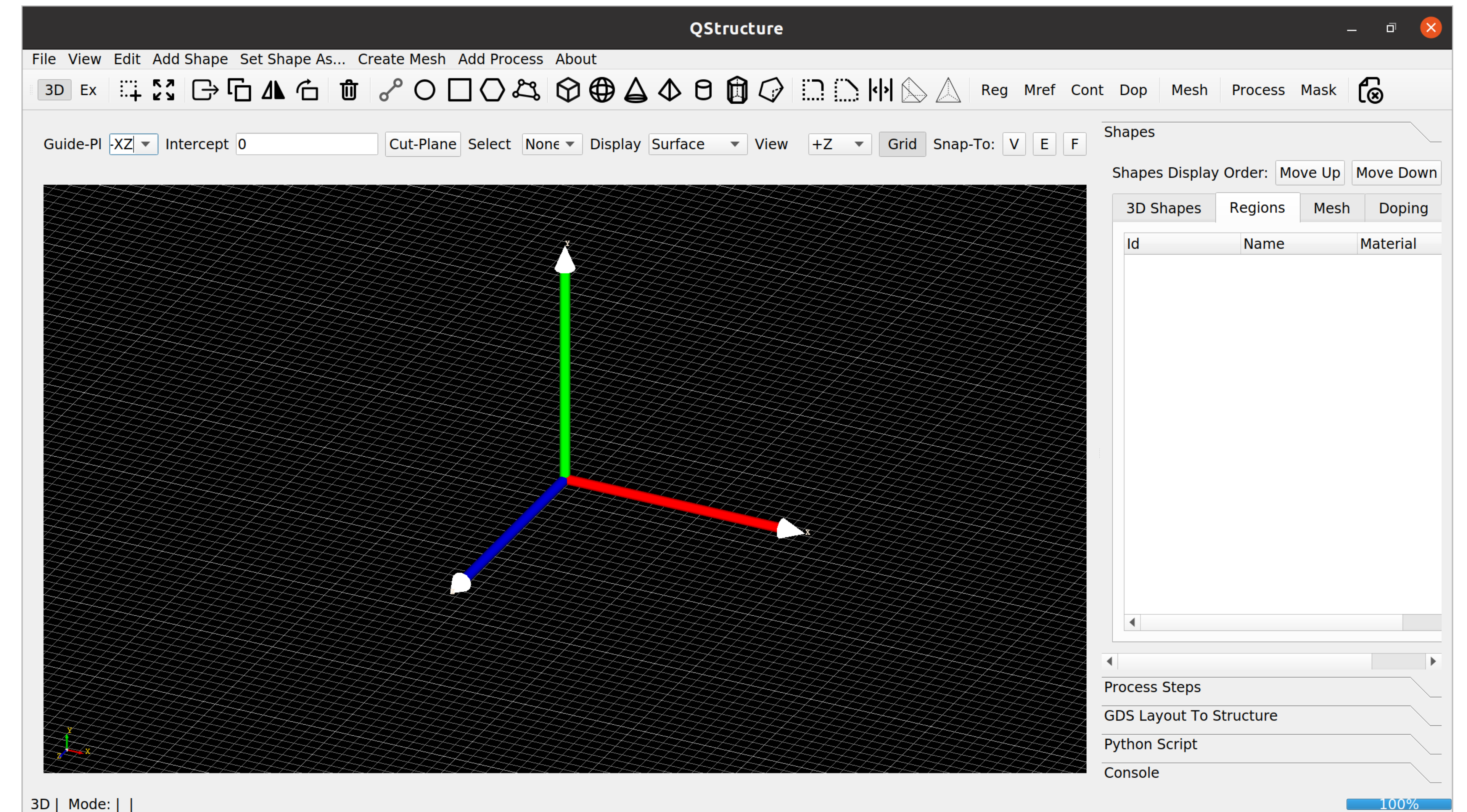


Figure 1: STEP files saved at the end of each process step. While color - background gas. Grey color - oxide. Yellow color - Silicon.

Process Generator - GUI



Process Generator - GUI

Process generator provides a user-friendly GUI to –

- Generate initial structure,
- Add process steps and define masks,
- Design process flow using *pseudo-process simulation*,
- Visualize and edit pseudo-process flow on-the-go,
- Perform full process simulations OR
- Export python script for full process simulations

License Purchase

Send the organization details along with –

- Node-locked licenses: mac-id of the machine.
- Server licenses: mac-id of the server.

All the functionalities of the structure generator GUI can be readily used in the process GUI.

User-manual and examples

A detailed user-manual describes –

- Theory employed in process simulations,
- Python functions and desired input arguments,
- Usage of GUI for process generation,

Contact Information

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