

1 Introduction

EMPDK is a stand-alone JAVA software. It prepares a layout file for EM simulation. Some of the basic requirements are the material properties of the layers in the layout. The output of EMPDK is in ASCII text form. At present EMPDK can read only CIF layout files.

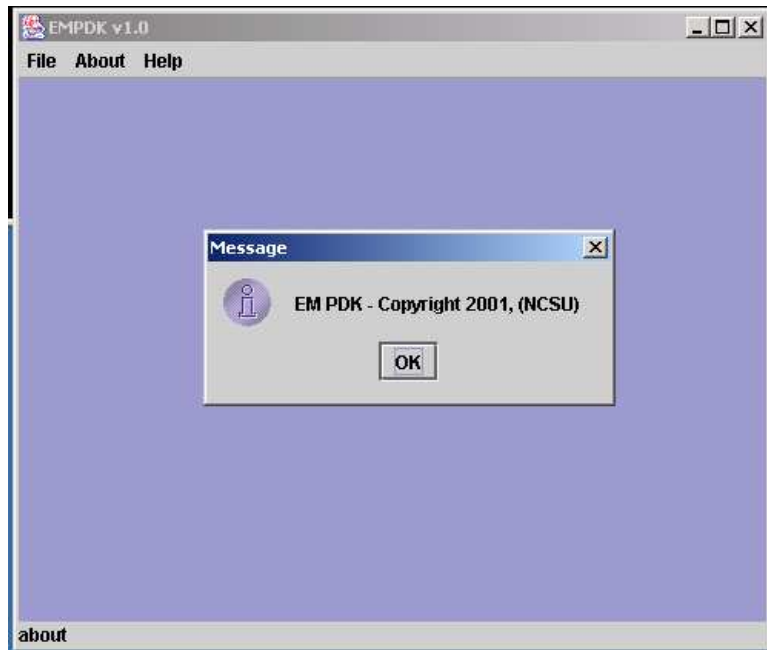


Figure 1: EMPDK

2 Creating a new technology file

The user must have information regarding the process and the layers that go into the layout. To create a new file, the user has to select the option 'New' from the 'File' Menu.

After providing the 'filename' the user will be prompted for information regarding the layers in the process. This information has be entered starting with the substrate layer working your way upwards.

Once the user is done entering the information for each of the layers in the process, he/she can select the 'Done' button in the dialog box. This will automatically generate the file for the user.

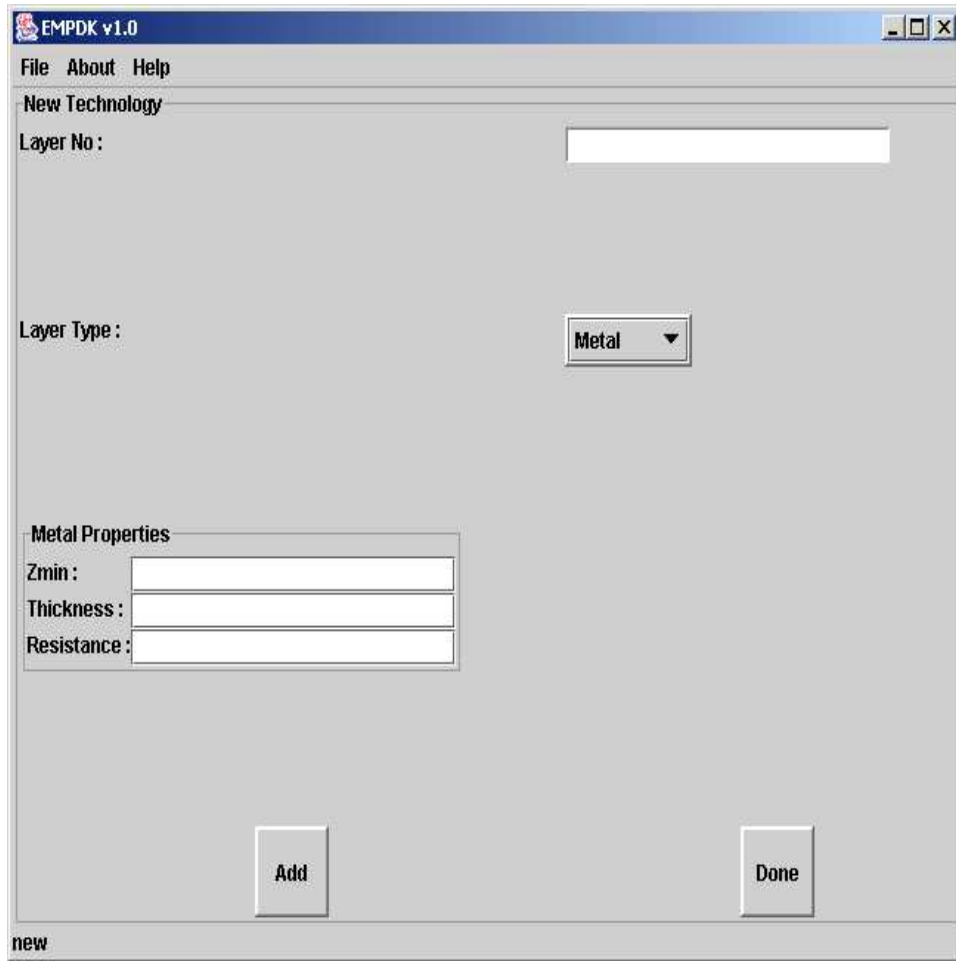


Figure 2: Creating a new technology file

3 Editing an existing technology file

To edit an existing file, the user must select the option ‘Open’ from the ‘File’ Menu. Once the user provides the tool with the layout filename, the tool displays a dialog box with the layers used for the layout.

The user must have process information regarding the layers generated by the layout tool. This information can be entered in the dialog box. Once the user is done, the process can be completed by pressing the ‘Done’ button in the dialog box.

4 Technology File Structure

The technology file allows the user to specify the process related parameters. The characteristic information obtained from the technology is used

- to specify the thickness of the layers
- obtain the ordering of the layers
- to obtain the electrical parameters like resistivity, dielectric constant, etc.

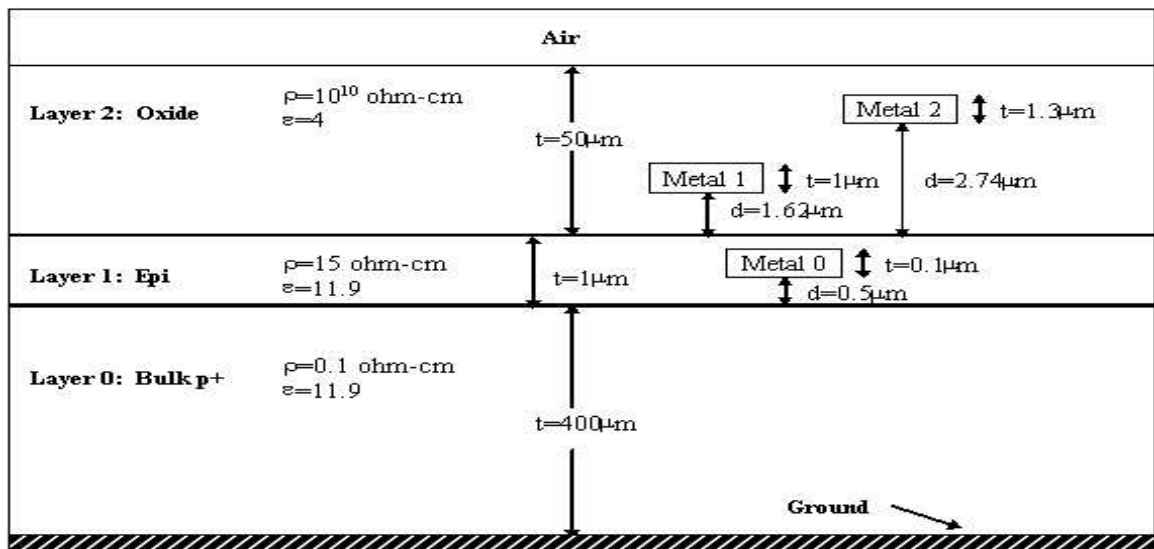


Figure 3: Sample process

The structure of the file is very simple and human readable. The first line is a comment line which gives us the version number of the technology file. The next two lines tell the simulator the number of metal and dielectric layers in this particular process. The description of the process starts with the process name specified by the ‘technology’ tag. Then we provide the simulator with the units

in which the related distance information is provided. By default it is microns. Then we specify the metal layers between the tags 'metal' and 'endmetal'. The information is specified in the bottom-up fashion, i.e, we provide the substrate and then the layer closest to it and work our way upwards. In the similar fashion we provide information of other layers like 'dielectric' and 'via'. The end of the file is denoted by the 'endtechnology' marker.

```
// TECHNOLOGY FILE

// METAL LAYERS : 2
// DIELECTRIC LAYERS: 1

technology cmos
UNITS microns
metal
  //name      zmin  thickness  resistivity(ohms.cm)  desc
  layer 0     0.00  0.35      0.2                   // G substrate
  layer 1     0.7  0.2      1.56E-4                // M
endmetal

dielectric
  //name      zmin  thickness  dielectric constant
  layer 2     0.35  0.35      3.9
enddielectric
endtechnology
```

Figure 4: Sample Technology file